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CONTENTS

Three Psychotherapies Examined Ellis, Rogers, Perls	103
<i>J. Stoten and W. Goos</i>	
Student Perceptions of the Generation Gap	116
<i>K. R. Vandenberg and A. G. Konrad</i>	
Teacher Expectancy and Its Relation to Physical and Interpersonal Characteristics of the Child	122
<i>J. C. LaVoie and G. R. Adams</i>	
Teacher Attitudes and Cultural Differences	133
<i>L. Hoxter</i>	
Education and Values in an Indian Community	146
<i>J. W. Friesen</i>	
Alienation and Achievement among Indian-Métis and Non-Indians in the Mackenzie District of the Northwest Territories	157
<i>G. J. Franklyn</i>	
Reference Groups and Significant Others of Student Teachers	170
<i>H. L. Pierce</i>	
A Comparison of Listening Comprehension Levels in Literary Narrative, Science and Social Studies Materials at the Sixth Grade	178
<i>R. W. McLeod</i>	
Economies of Scale in the Ontario Public School Sector	186
<i>D. A. Dawson and K. J. Dancey</i>	
Responsiveness of Educational Expenditures to Factors of Economic Growth	198
<i>B. Sharples</i>	
Factorial Structure, Reliability, Validity, Effectiveness and Efficiency of the Canadian Cognitive Abilities Test	208
<i>B. S. Randhawa, D. Hunt and S. A. Rawlyk</i>	

FACULTY OF EDUCATION
The University of Alberta

EDITORSHIP OF A.J.E.R.

Dr. J. McLeish has had to resign the editorship of A.J.E.R. as he has been granted a year's study leave from his duties at the University. The Publications Committee wishes to thank him for his services to the Journal over the past two years, and to welcome Dr. Thomas E. Kieren as the new editor. Dr. Kieren holds a B.A. degree from Carleton College (Minnesota), as well as the M.A. and Ph.D. degrees from the University of Minnesota. Before coming to the University of Alberta, he taught high school mathematics, educational foundations, and mathematics methods in the College of Education at the University of Minnesota. He came to the University of Alberta, Department of Secondary Education in 1967, and was promoted to Associate Professor in 1969. He has been heavily involved here in teaching Mathematics Curriculum and Instruction courses and in supervising student-teachers and graduate students. We look forward to his term of office as editor and wish him well.

*Erwin Miklos, Chairman
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Three Psychotherapies Examined: Ellis, Rogers, Perls

This study uses Bales' Interaction Process Analysis (I.P.A.) to identify significant process elements in counselling and psychotherapy. For this purpose, the film "Three Approaches to Psychotherapy" was analysed. This film records the counselling of a client on successive occasions by Carl Rogers, Fritz Perls, and Albert Ellis, respectively. The three interviews were evaluated by the authors using the I.P.A. system. Inspection of the behaviour categories indicated general agreement between the expressed intentions of the therapists and their actual behaviour in the clinical interview. Statistical comparisons indicated significant differences between the three therapists and also significant differences in the client's behaviour in the three situations. (John Stoten and Walter Goos are both graduate students in the Department of Educational Psychology, Faculty of Education, University of Alberta.)

Clinical psychologists have shown a growing concern for accurate assessment of the effectiveness of different approaches to counselling and psychotherapy. This concern is evidenced by the accumulation of a considerable body of research literature concerning the results of therapy. In 1952, Eysenck attempted to show that psychotherapy does not significantly contribute to the improvement of neurotics (Eysenck, 1952). This study generated much controversy, but recent reviews of the relevant research literature appear to substantiate Eysenck's contention that the average improvement of clients, directly resulting from counselling and psychotherapy is insignificant (Truax and Carkhuff, 1967; Bergin, 1971). However, the rationale on which these studies are based is very ambiguous. Precise comparison of cases is impossible through lack of such crucial materials as: equivalent outcome criteria, variation in treatment procedures, imprecise definition of client disorders, and the absence of reliable clinical evaluation of patient improvement.

The greater number of outcome studies appear significantly lacking in specificity. However, some authors have made a closer inspection of criterion scores and revealed significant within-group variations (Truax & Mitchell, 1971; Bergin, 1963). These studies have demonstrated that gross measures of client change mask the fact that some clients improve significantly whilst others deteriorate significantly. It therefore seems desirable to isolate those common elements of the therapeutic process that appear to produce significant client improvement. This task is not easy, for "therapy is a non-unitary phenomenon" (Truax & Mitchell, 1971, p. 301).

McLeish has recently demonstrated that, when a sophisticated research methodology is used, no changes in clients can be demonstrated to take place in psychotherapy. The same is generally true of students undertaking "sensitivity training". There are no changes at all in personality structures over a three-month period and scarcely any increment in empathic communicative skills. However, learning about empathy and group dynamics increases significantly in the observers of such training, and also in the participants in the case of Gestalt-type training. The main point established by this research (McLeish & Park, 1973; McLeish et al., 1973; O'Neil, 1973) is the specific nature of the learnings which take place and their relationship to the stability-neuroticism of the student or client. Relatively unstable clients and students do not, in general, learn: many indeed unlearn their previous insights (McLeish et al., 1973).

Traditionally, patient change has been assessed by end-point measures, that is, pre-test and post-test measures. As used by psychotherapists, such measures tend to be unreliable, as random fluctuations in the individual client's "condition" can be mistaken for systematic change resulting from treatment. Such methods of assessment, unless used in a properly designed experimental enquiry, tend to reveal nothing about the treatment. Experimental designs tend also to ignore the client's interview behaviours, that is, the process aspects of client change. This traditional separation of process and outcome is not very illuminating, since any systematic improvement in the patient's behaviour manifested during treatment may be as legitimately classed as outcome—changes observed on conclusion of the therapy.

It is not unreasonable to assume that a client's everyday behaviour and his behaviour in therapy are significantly related and that the two areas of assessment should be combined. Such a combination would be valuable on several grounds. First, it would facilitate the comparison of client behaviours in the therapeutic situation and in his normal life situations. This would provide for greater reliability in outcome assessment. Second, it would lead to a specific understanding of the client's disorder and would provide for greater specificity with respect to treatment. Last, and most important, such increased specificity with respect to patient condition and treatment method would facilitate more precise comparisons of treatment methods and their relative efficacy.

Unfortunately, psychotherapy is at the stage where significant behavioural process elements remain largely undefined. Common sense indicates that there are differences in the process aspects of various thera-

peutic approaches. However, common sense alone provides little substantial help in identifying significant process elements. Several attempts have been made, in the last decade, to define the common elements of therapist behaviour that lead to significant client improvement. Most of these attempts have centred upon a specific therapeutic orientation (e.g. Truax, 1963), and no one system of analysis has been tested for suitability to all counselling methods. The following research would therefore seem necessary: first, to test a number of available systems for applicability to all counselling methods; second, to employ a chosen system for the definition of the process elements characterizing the various approaches; third, to use this system to relate pre-therapy, within-therapy, and post-therapy client behaviours with therapist interview behaviours. This study is concerned with the most elementary step, that of testing a chosen system of behavioural analysis for applicability to differing therapeutic approaches.

There are several available systems of behavioural analysis. Of these, the best known is probably Bales' *Interaction Process Analysis (I.P.A.)* (Bales, 1950, 1970). This system, which has been described as "the descriptive shorthand of interpersonal behaviour" (Matheson, 1972, p. 25), was adopted for use in this study for the following reasons: first, the system was developed for use with small problem-solving groups and provides for both the classification of task-oriented and social-emotional behaviours; second, the system provides for continuous scoring of all behaviour, verbal and non-verbal as well, and yet it provides for a reasonably parsimonious classification of process content.

Bales considers that all small groups are similar in that they involve a plurality of persons who have certain common task problems arising out of their relation to an outer situation, also certain problems of social and emotional relationships arising out of their contact with each other (Bales, 1950, p. 34). On this basis, Bales has developed a set of twelve categories, defined in simple common-sense terms. Each act is scored in one, and only one, of the twelve categories. For scoring purposes, the observer takes "the role of the generalized other" (Bales, 1950, p. 39) with respect to the actor. That is, the observer attempts to take the place of a generalized group member or a specific other who is receiving or perceiving the act. No attempt is made to "enter the mind" of the actor. Rather, the emphasis is that inner personality dynamics are best understood through observation of an individual's overt behaviour.

For scoring purposes, a verbal act is defined as a single simple sentence or its equivalent. Non-verbal acts are scored in units which, roughly speaking, take an equivalent time interval to the simple sentence. As stated earlier, each act is scored in one of twelve categories. These can be broadly divided into the following three areas: positive social-emotional, negative social-emotional, and neutral task-oriented. A full description of scoring techniques is outside the scope of this paper. However, detailed description of the procedures actually used is available elsewhere (Bales, 1950, 1970).

Bales has used I.P.A. to investigate several aspects of small group functioning, notably phase movements, equilibrium tendencies, and a

three-dimensional approach to the definition of personality. The first aspect concerns Bales' contention that the attention of a group focuses successively on problems of orientation, evaluation, and control (Bales, 1970, 1972). The second aspect concerns Bales' contention that a dynamic equilibrium is maintained between social-emotive and task-oriented activities in a problem-solving group (Bales & Strodtbeck, 1972). The last aspect concerns Bales' formulation of three-dimensional personality types or "social-psychological directions" on the basis of I.P.A. analysis of small group behaviour (Bales, 1970).

The applicability of I.P.A. to therapy groups has been investigated by several authors. An early attempt by Talland (1955) failed to confirm Bales' hypotheses regarding phase movement and equilibrium tendencies. However, subsequent research by Psathas (1960), and more recently by Matheson (1972) and McLeish, Matheson & Park (1973) has resulted in confirmation of certain of his hypotheses.

Several studies have utilized I.P.A. for psychotherapy research (Munzer & Greenwald, 1957; Roberts & Strodtbeck, 1953; Noble et al, 1961). A number of these have demonstrated that therapist behaviour significantly determines client behaviour (Strupp, 1955; Gamsky & Farwell, 1966). The utility of I.P.A. as a tool for psychotherapy research thus appears to be demonstrated. However its suitability as a universal method of behavioural assessment for psychotherapy is, as yet, undetermined. The particular purpose of this study is to examine the suitability of the system for the analysis of therapist and client interview behaviours in three markedly different therapeutic approaches.

Description of Therapies.

The three therapies studied were: Rational-emotive, (Ellis), Client-centered (Rogers), and Gestalt (Perls). These are derived from different assumptions concerning the counselling process. The purpose of this project was to determine if the differences of theory are in fact reflected in the therapists' behaviour in the counselling process. Do differences in practice exist, and if so, do these differences derive from theory? Consequently, it seems desirable to summarize the theoretical structures of these therapies, and to consider counsellor approaches in each situation.

Rational-emotive therapy was developed by Ellis (1962, 1971, 1973). For Ellis, the purpose of therapy is primarily to teach the client. This emphasis is derived from the premise that the client is indoctrinating himself with irrational and illogical thoughts. The indoctrination results in negative feelings which are generated from negative evaluation of previous events. It is not the events themselves but the client's evaluation of these events that produces subsequent irrational behaviours. The problems become manifest in behaviour at the point where the client has so thoroughly indoctrinated himself that he cannot extricate himself from these negative evaluations without help. The therapist teaches by counter-indoctrinating the client. This should result in a rethinking and re-evaluation of former self-judgments. The therapist attacks the negative and self-defeating behaviour patterns with a clear, logical analysis of the behavioural links causing the present disturbance. Related to this indoc-

trination is the practice of concrete behavioural acts through which the client can make new assessments of himself.

In contradistinction, the client-centered therapy of Carl Rogers (1961, 1967, 1972) eschews authoritarian direction in the belief that a "genuine" relationship is fundamental to therapeutic change. It assumes that the client perceives his world in an essentially phenomenal way, and that negative emotional behaviour results from the lack of agreement between the individual's experience and the reality in which he lives. Consequently the centre of evaluation shifts from the self to external loci. The person then becomes unable to call to awareness the totality of his experience, according to Rogers.

Rogers (1961, p. 103) describes therapy as a "process whereby man becomes his organism, without self deception, without distortion". According to Rogers, the therapist needs to establish a climate in which congruence, unconditional positive regard and empathy predominate. The client must experience these emotions in his interactions with the therapist. In this relationship he is encouraged to experience his feelings to their limits, without denying his negative evaluations. When this occurs the client discovers that he can live his experience with all of its variety. He can formulate himself out of his experience instead of trying to impose a formulation of self upon his experience, denying to awareness those elements which do not fit (Rogers, 1961, p. 80). The client should then become more flexible and tentative in dealing with his present experience.

Gestalt therapy, according to Perls (1965, 1969a, 1969b) posits an understanding of man as a total functioning organism. The individual encounters the demands of society. In an effort to comply, he compromises and denies his own feelings, desires and emotions. Thus he becomes "out of touch" with his fellows and dissociates himself from nature. This blocking of one's own senses diminishes human potential and distorts perspective. "In responding to 'should' demands the individual plays a role not supported by genuine needs. He becomes both phony and phobic. He shies away from seeing his limitations, and plays roles unsupported by his potential" (Perls, 1969c, p. 2).

The therapist helps the client to confront this phony and phobic behaviour through the creation of a "safe emergency". He draws attention to the client's total behaviour in the "here-and-now" situation, concentrating not solely on the verbal material generated by the client but on the totality of expressive activity. He draws attention to inconsistencies in present behaviour, to the fact that the client takes flight into memory and expectation. At this point the therapist needs to bring the client back to his present reality. The therapist's aim is to aid the client to overcome compensatory behaviour and thereby bring him to an "ownership" of his own behaviour. The emphasis is on "organismic self-regulation". When this process begins the client is able to take further responsibility for his behaviour. An integration of the personality into a unity begins to take place, and the client's potential is further realized.

Behavioural Expectations

To assess the effectiveness of the three methods of counselling, it is useful to detail behavioural expectations of the three psychotherapists in the context of the three types of counselling sessions. Rather than trying to establish our expectations, and to make predictions about the therapist's behaviour on the basis of our understanding of their stated theoretical systems, the authors chose to list these expectations from an analysis of what each of the therapists said he was going to do in the preamble to the film used in this project. The summary statements given in the film by each of the therapists are consonant with the theoretical bases outlined above, and it is these expectations which are used for comparative purposes in this paper. They are listed below.

1. Rational Emotive Therapy (Ellis).

- a. The therapist will seek to demonstrate to the client the ideological antecedents of the present negative attitudes and negative evaluations with which the patient has become indoctrinated.
- b. The therapist will create concrete home assignments for the client. By such work and practice there will be a freeing from the illogical evaluations.
- c. The therapist will help the client apply scientific method to facets of human living. In other words he will assist the client to question and challenge those assumptions which create anxiety.

2. Client-centered Therapy (Rogers).

- a. The therapist will seek to provide a climate conducive to producing change. He will be aware of the totality of his own feelings, expressing them without imposition, and in this activity provide a genuineness in relating.
- b. He will demonstrate genuine care and "prizing" of the person.
- c. He will attempt to understand the patient's inner world in order to know the true nature of the feelings perceived by the client.
- d. He will encourage the client to explore feelings and attitudes more deeply and thereby discover hidden aspects of which he was previously unaware.
- e. Sensing a realness in this experience of discovery, the client will come to prize the self more.
- f. With this greater acceptance of self the client will move from a fear of human relationships to a more direct encounter with others.
- g. The construction of life concepts will move from black and white meanings to more tentative and flexible attitudes.
- h. The client will move from an external to an internal locus of evaluation.

3. Gestalt Therapy (Perls).

- a. The therapist will not concentrate on rational explanation or interpretation of the client's behaviour, but rather will provide opportunities for the patient to understand his own behaviour.
- b. The therapist will disregard most of the verbal communications of the client and instead concentrate on the non-verbal behaviour. The latter is considered to be least subject to self-deception. In this

process, through the counselling encounter a relevant Gestalt will emerge.

- c. The therapist through his skilful "manipulations" will bring the client to a confrontation of self.
- d. The patient will identify with his lost potential and, assimilating the projections, will act out the alien parts of himself.

Experimental Procedures

To enable the three therapies to be analyzed in detail, a series of films entitled *Three Approaches to Psychotherapy* was used. In these films each of the therapists explains the essence of his counselling approach and suggests possible behavioural acts involved in the process. They each counselled the same client ("Gloria") in interviews lasting about 20 minutes. Each therapist gave an assessment immediately following his counselling session. In this assessment, each of the therapists indicated that he thought the session with the client was representative of his method of therapy.

This film was first used as a training film in the Bales system of *Interaction Process Analysis* (Bales, 1950). Upon completion of the training, the authors proceeded to make a detailed analysis of the film to rate the behaviour of the therapists. The coding of behaviour in each of the counselling sessions was done in periods of approximately equal lengths (10 minutes). Scott's coefficient was used to check inter-rater reliability. The authors found their reliability to be in the range of 0.81-0.82 (Flanders, 1966). Since the method of analysis finally used consisted of adding the coded acts of the two raters, the Spearman-Brown estimate of reliability is 0.90.

It is useful to compare the behaviours observed in the therapy dyads to the expected behaviours as these are delineated by the three therapists.

In Rational Emotive therapy, one would expect the therapist to demonstrate an abundance of acts in the categories of fantasy, giving opinion, suggestion and information. This behaviour is expected since it is the therapist's stated objective to draw the client's attention to her negative self-evaluation, and to establish positive self-assessments in its place. The therapist is in the role of teacher, and the client in that of student. In these roles, at least as defined by Ellis, one would expect the client to exhibit passive behaviour and to show significant tension. The therapist, on the other hand, would tend to show critical and judgmental behaviour. The results of the I.P.A. analysis confirm these expectations (Table 1: Gloria-Ellis).

On the basis of the counselling theory outlined by Rogers, one would expect the therapist to demonstrate solidarity and acceptance, which should lead him to show minimal tension and few unfriendly acts. Also he should evidence activity related to giving suggestion and information. He should offer little opinion. The activity, centred in the present, should limit the expression of fantasy. As a consequence of the therapist behaviour described, the client could be expected to exhibit behaviour in the following categories: expressing solidarity, asking opinion and suggestion. Considerable tension should be recorded owing to the lack of direction

TABLE 1

INTERACTION ANALYSIS: THREE THERAPISTS, SAME CLIENT

Category	Perls %	Rogers %	Ellis %	Gloria (Perls) %	Gloria (Rogers) %	Gloria (Ellis) %
1. Seems friendly	8.7	38.2	5.4	0.9	2.6	5.6
2. Jokes, Fantasy	17.6	5.4	45.7	31.4	47.1	25.1
3. Agrees	3.1	2.3	2.9	3.7	12.1	14.2
4. Gives suggestion	22.0	11.2	14.7	1.4	2.5	6.2
5. Gives opinion	17.1	32.3	22.0	3.9	6.6	1.2
6. Gives information	8.2	3.3	2.9	1.9	2.1	2.2
7. Asks information	1.5	0.9	0.4	2.5	0.1	1.9
8. Asks opinion	6.4	2.1	1.5	0.4	2.4	1.9
9. Asks suggestion	1.0	1.2	0.2	0.2	2.9	0.0
10. Disagrees	1.5	0.7	0.2	4.1	1.7	2.2
11. Laughs, Tension	8.4	2.3	2.5	20.2	14.6	28.8
12. Seems negative	5.9	0.0	1.7	29.4	5.3	10.8
Grand Totals	397	427	523	564	460	323

 χ^2 Therapist = 497.18 df = 22 p < 0.001

 χ^2 Client = 330.48 df = 22 p < 0.001

provided by the therapist. Little unfriendly activity should be expressed by the client. Again, the results confirm the expected therapist behaviour, except Rogers proffered more opinions than was expected. The client demonstrated less solidarity and more fantasy than was expected.

From Perls' stated intentions, one would expect very little fantasy to be generated by the therapist. In addition, he should offer some opinion, suggestion, and information. One would expect some solidarity and some disagreement ("safe emergency") as the therapist attempts to help the client confront her own behaviour. The client activity is expected to be relatively greater in areas of fantasy (escape), tension and negative behaviour towards the therapist (confrontation), more disagreement is to be expected. The therapist behaviour was as expected. However, one would have expected less activity by the therapist in the category of fantasy, and more in the category of opinion giving. Client behaviour was as expected (cf. Table 1: Gloria-Perls).

Although the above comparisons of expected and observed interview behaviours are interesting, they have little statistical meaning. A chi-square test of independence was therefore employed to provide a statistical comparison of the three counselling techniques.

Significant differences were obtained between frequencies of initiated acts, both for therapists and for the client in the three counselling sessions. These differences are at the 0.1% level. Arising from these findings, the chi-square values for each behaviour category were examined to determine the most significant interview behaviours for client and therapists. To this end, the arbitrary decision was made that only those categories contributing more than one-twelfth of the chi-square total were considered to be significant.

FIGURE 1. FREQUENCIES OF ACTS IN BALES' TWELVE CATEGORIES (THREE THERAPISTS, SAME CLIENT)



Client Behaviour:

- A. The client exhibited significant negative behaviour (Bales' category twelve) towards Perls as compared with Rogers or Ellis. In fact, negative client acts exhibited in the Rogers and Ellis interviews were predominantly towards self rather than towards the therapist.
- B. The client fantasied (Bales' category two) significantly more with Rogers than with Ellis or Perls, Ellis eliciting the least client fantasy.
- C. The client exhibited significantly less agreement (Bales' category three) with Perls than with either Rogers or Ellis.

The above three behaviour categories contributed over sixty percent of the chi-square total. It was found that the categories: client giving information (Bales' category six), client disagreement with therapist (Bales' category ten), and client asking for opinion (Bales' category eight), differentiated least between the client's behaviour in the three interviews. In fact, these three categories contributed less than five percent of the chi-square total.

Therapist Behaviour:

- D. Rogers exhibited far more solidarity with the client (Bales' category one) than either Ellis or Perls, Ellis exhibiting the least activity in this category.
- E. Ellis fantasied (Bales' category two) to a greater degree than either Rogers or Perls, Rogers fantasising the least.

These two behaviour categories contributed over seventy percent of the chi-square total. It was found that the categories: agreement with client (Bales' category three), asking for information (Bales' category seven), asking for suggestions (Bales' category nine), and disagreement with client (Bales' category ten), differentiated the least between the three therapists. These four categories accounted for less than three percent of the chi-square total.

Summary

The inspection of therapist and client behaviour profiles (Fig. 1) indicates that I.P.A. portrays the significant process elements in each counselling session. The statistical comparisons indicate that I.P.A. reveals significant differences between the three approaches. Finding "A" reveals that the client exhibited significant negative behaviour towards Perls as compared with Rogers and Ellis. In addition, finding "C" reveals that the client exhibited significantly less agreement with Perls than with either Rogers or Ellis. These two findings show an agreement between intended therapist strategies and actual behaviour. For example, Perls expressed the intention of "frustrating" and "confronting" the client. This behaviour would be expected to create significantly greater client negativism and significantly less client agreement than the other two approaches.

Finding "B" reveals that the client fantasied most with Rogers, least with Ellis. This finding is the reverse of expected client behaviour. The client was expected to engage in significantly more fantasy with Ellis, owing to his expressed intention of discussing the past and future. This did not happen. This finding points to the tenuous link between intended

therapist behaviour and behavioural outcomes on the part of the client. Finding "D" reveals that Rogers exhibited significantly more solidarity than either Perls or Ellis, Ellis exhibiting the least solidarity. This finding shows agreement with intended therapist behaviours as Rogers emphasized the importance of therapist solidarity. In contrast, Ellis expressed the intention of "teaching" the client, placing little emphasis upon expressing therapist solidarity. This contrast is borne out by the I.P.A. totals for Ellis and Rogers in Bales' category one. Finding "E" also shows an agreement between intended and actual therapist behaviours. Ellis expressed the intention of discussing the past and future whereas both Rogers and Ellis emphasized the need to discuss only the present. Bales' category two confirms this difference of emphasis.

The above discussion shows that I.P.A. does accurately identify the significant characteristics of differing approaches to psychotherapy. In addition, the analysis confirms the need for the systematic analysis of interview behaviours. Client interview behaviour is difficult to predict from intended therapist behaviours. Both therapist and client interview behaviours require analysis before sound predictions of client behaviour can be made.

Although there is experimental error inherent in any system of behavioural analysis, such analyses are far more reliable than subjective clinical appraisals. In addition, we can make an assessment of the amount of error involved in any particular observation. For example, here inter-rater reliabilities of approximately 0.90 were obtained. This indicates a high level of agreement between the two raters' observations (common variance greater than 80%). Thus, individual bias is greatly eliminated by using such a system as I.P.A.

Those Bales' categories concerned with social-emotional behaviours provided the most significant differentiation between the three interviews. This appears reasonable as psychotherapy is essentially concerned with social-emotional behaviour. However, task-oriented categories did contribute to differentiation between the three interviews and so all categories appear relevant to psychotherapy research. Although this study was limited to three psychotherapeutic approaches the method could be extended to other therapeutic situations, such as behaviour modification and transactional analysis. It has already been used in the study of small therapy groups other than dyads (McLeish et al., 1973).

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Student Perceptions of the Generation Gap

The view is widely held that there exists a distinct set of social differences between youth and adults. This study examined perceptions of high school students in urban and rural centers in Alberta regarding the generation gap. Although only one-fourth of the respondents perceived the existence of a generation gap between themselves and their parents, nearly one-half felt that a generation gap existed for other members of their generation. It was also found that perception of the generation gap could be related to sex, religious affiliation, and value orientation, but not to age, family background, community background, socioeconomic status and employment status of the mother of the respondent. (Dr. Konrad is Associate Professor in the Department of Educational Administration, The University of Alberta; Mr. Vandenberg is a teacher in the Correspondence School Branch, Department of Education, Edmonton.)

The generation gap is widely recognized as an important problem facing society. Social scientists have suggested that there is a distinct set of social differences between youth and the older generation. Margaret Mead (1969), for example, maintained that the young are by definition separated from their elders, and that today members of the older generation are immigrants in time living in an age substantially different from anything they have previously experienced.

In its basic form the generation gap may be regarded as a function of the long maturation period of human beings. In this sense the generation gap is a common factor throughout mankind's history and its present manifestation is different only in degree from that which existed in the past. Crawford (1967) asserted that the generation gap has merely been re-discovered. He claimed that the constant repetition of the idea that the gap between the young and old is wider and deeper now than it ever was before, has increased general acceptance of this idea. A related position was taken by Brawer (1971) who suggested that generational differences

in attitudes, values, and behaviour may be no different today from what they were in the past, but that the mass media have served to make these differences more obvious to almost everyone. Brawer noted that the generation gap phenomenon is not new, strange, or unique, in that the histories of many societies illustrate traditional separation among age groups.

Other writers, including Coleman (1965) and Mead (1970), believe that today's generation gap is different not only in degree, but in kind, from that which existed in the past. Generally this difference is attributed to rapid technological and social change. Coleman (1965) contended that changes in the structure of society have given rise to communication problems between adults and youth. He argued that changes such as the increased number of women in the labor force and the shift toward the nuclear family have combined to make the family less cohesive and less effective as a child-rearing agency. This development, Coleman claimed, is largely responsible for a breakdown in intergenerational communication. Mead, referring to the older generation, suggested that no other generation in the past

... has ever known, experienced, and incorporated such rapid changes, watched the sources of power, the means of communication, the definition of humanity, the limits of their explorable universe, the certainties of a known and limited world, the fundamental imperatives of life and death—all change before their eyes (Mead, 1970, p. 78).

Realizing this, the older generation must recognize that the young "... will never experience what we have experienced, and that we can never experience what they have experienced" (Mead, 1970). In this sense, "... we must recognize that we have no descendents, as our children have no forebears" (Mead, 1970).

Design of the Study

Although a great deal has been written about the generation gap, little empirical research has been reported. This article concerns a recent study (Vandenberg, 1973) which was designed to examine the perception of the younger generation with regard to the generation gap.

The sample for the study was drawn from two urban and five rural high schools in Alberta. Each of the urban schools was selected at the discretion of personnel within the public and separate school systems, respectively, in Edmonton. Selection of the five rural schools was made on a random basis from the list of operating schools located within a 75-mile radius of Edmonton. Schools in communities with a population of more than 5,000 were not included in the list of potential rural schools for use in the study. Grade ten and twelve classroom groups of students were selected in consultation with school personnel so as to encompass both matriculation and non-matriculation students.

Usable data were obtained from 480 students by means of a four-part questionnaire designed to gather information with regard to demographic variables, the parent-child relationship, value orientations as measured by the *Differential Values Inventory*, and perceptions of a personal generation gap and a generation gap for others.

The Findings

The degree to which students perceived a personal generation gap, and the degree to which they perceived a generation gap for others, were measured by responses selected from a five-part scale ranging from "always" to "never." Details of the frequency distribution by response categories for both questions are given in Table 1.

TABLE 1
STUDENT PERCEPTIONS OF A PERSONAL GENERATION GAP
AND A GENERATION GAP FOR OTHERS (N=480)

Questionnaire Item	Always	Often	Occasionally	Seldom	Never
I feel that there is a generation gap between me <u>personally</u> and my parents.	22	109	189	130	30
I feel that there is a generation gap between my <u>generation</u> and my parents' generation.	26	206	179	53	16

$$\chi^2 = 67.14 \quad 4df \quad p < .001$$

An analysis of the data revealed that approximately one-quarter of the respondents felt that a generation gap always or often existed for them personally. For these individuals, the generation gap may present a very real and difficult problem. At the same time, nearly one-half of the respondents felt that a generation gap always or often existed for others. The significant difference between perceptions of a personal generation gap and perceptions of a generation gap for others provides some support for the contention that the generation gap phenomenon does not in fact exist to the degree to which it is often held to exist. This particular finding indicates that a measure of misconception may be associated with the generation gap phenomenon.

Another objective of the study was to examine differences in student perceptions of the generation gap in terms of selected variables suggested by the research literature. Several writers, including Cathcart (1967), Clark (1969), Lavers (1970), Mauss and Winston (1971), and Anderson (1972), have suggested that differences in student perceptions of the generation gap could be examined in terms of the following variables: age, sex, religious affiliation, family background, community background, socioeconomic status, employment status of the student's mother, and value orientations.

Responses to the questionnaire items were to be selected from a five-part scale ranging from "always" to "never". Mean scores for student perceptions of a personal generation gap and for student perceptions of a generation gap for others were determined for each variable and a one-way analysis of variance was performed to test for any significant differences. A summary of the findings resulting from this analysis is presented in Table 2.

Student Perceptions of the Generations Gap

TABLE 2
STUDENT PERCEPTIONS OF THE GENERATION GAP COMPARED ON THE BASIS
OF VARIOUS DEMOGRAPHIC VARIABLES AND VALUE ORIENTATIONS

Variables	Perceptions--Personal Generation Gap	Perceptions--Generation Gap for Others
	F Ratio	F Ratio
Age	0.27	0.82
Sex	0.68	1.99*
Religious Affiliation	2.61*	0.84
Family Background		
Residence	1.76	0.54
Position in the family	1.00	0.97
Family size	0.79	0.49
Marital status of parents	0.18	1.57
Community Background	1.69	1.37
Socio-economic Status	1.79	1.71
Employment Status of Mother	0.63	0.89
Value Orientations		
Traditional Value Orientation	1.13	3.18**
Emergent Value Orientation	1.53	2.01

* $p < .05$

** $p < .01$

As shown in Table 2, no significant differences in student perceptions of a personal generation gap, or of a generation gap for others, were found when the students were grouped on the basis of age.

When the sample was divided on the basis of sex, no significant difference was found in mean scores for perceptions of a personal generation gap. However, a significant difference between males and females did exist in terms of perceptions of a generation gap for *others*. Males were found to perceive a generation gap for others to a significantly greater degree than females. A possible explanation for this finding may lie in the differences between the sexes in the socialization process; male adolescents are taught to see themselves as more aggressive and more independent than females. Perceptions of greater aggressiveness and independence may be directly related to perceptions of a greater generation gap between youth and their parents.

There was a significant difference in perceptions of a personal generation gap when the students were classified by their religious affiliation (Catholic, Protestant, Other, and No Religious Affiliation). Results from application of the Scheffé multiple comparison of means test indicated a significant difference (.085 level of probability) between the mean scores for students of Protestant affiliation and those who had no religious affiliation. Students who had no religious affiliation perceived a personal generation gap to a significantly greater degree than did students of Protestant affiliation. While students of Catholic and other religious affiliations also perceived a personal generation gap to a lesser degree than those who had no religious affiliation, these differences were not statistically

significant. It would appear, from these findings, that religious affiliation may contribute to lessening the separation between the generations.

Student perceptions of a generation gap were also examined in relation to family background data, including whether or not they lived with their parents, position in the family, family size, and the marital status of the respondent's parents. No significant differences in student perceptions of a personal generation gap, or of a generation gap for others, were found in relation to family background data.

Similarly, no significant differences in student perceptions of a generation gap were found when students were grouped according to their rural or urban background, socio-economic status as measured by a modified form of the *Gough Home Index Scale*, or the employment status of their mothers.

Value orientations in the study were derived from scores on the *Differential Values Inventory* (Prince, 1959) revised by Friesen, of The University of Alberta, in 1970. No significant differences in student perceptions of a personal generation gap were found to exist when students were grouped on the basis of their traditional or emergent value orientations. Similarly, no significant differences in student perceptions of a generation gap for others were found when students were grouped according to their emergent value orientations. As shown in Table 2, a statistically significant F ratio was obtained for differences in perceptions of a generation gap for *others* when students were grouped according to their traditional value orientations. Students who scored high on the traditional value orientation scale perceived a generation gap for others more often than did students who scored low. However, when the Scheffé multiple comparison of means test was applied, no significant differences were found between any pairs of means.

Implications

It is evident from the findings of this study that the generation gap does not exist for some individuals and that it exists to varying degrees for others. Although sex, religious affiliation, and traditional value orientation related significantly to some aspect of the perception of a generation gap, it appears that differences in perceptions of a generation gap cannot be explained simply by identifying demographic variables. The complexity of the generation gap phenomenon implies the need for further research in this area.

A major finding of this study suggested the existence of misconception associated with the existence of a generation gap. Teachers and administrators should be aware of the misconceptions which may be held about the generation gap, and it is suggested here that they can help to expose, and thereby reduce, some of the misunderstanding which surrounds the generation gap problem.

It may be appropriate for the school to engage students in an exploration of intergenerational relationships. Perhaps students should be encouraged to examine their attitudes toward their parents; feelings and attitudes are easier to change after they have been acknowledged. A clarification

tion of student attitudes toward adults could help to reduce the generation gap.

Teachers and administrators can also work to bring students and their parents together in various activities initiated by the school. Such activities could include student-parent discussion groups, as well as a variety of athletic, theatrical, musical and academically-oriented programs. These activities might well serve to promote a greater degree of intergenerational communication, and thus help to reduce the misunderstanding which may exist between students and their parents.

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Teacher Expectancy and Its Relation to Physical and Interpersonal Characteristics of the Child

The effects of physical attractiveness, sex of child, and conduct of the child on teacher expectations were investigated. Male and female teachers in the primary and elementary grades were presented with a student progress report of a boy or girl of low, moderate, or high physical attractiveness whose conduct evaluation was either acceptable or unacceptable and asked to predict academic ability, level of aspiration, and leadership potential. A color photograph of the student was attached to the report. Conduct level of the child influenced teacher predictions on all measures, while level of attractiveness and sex of child appeared to exert little effect. A teacher expectancy model was used to interpret the results. (Dr. LaVoie is Associate Professor of Psychology at the University of Nebraska at Omaha; Dr. Adams is an instructor in Educational Foundations.)

Recent research on expectancy effects seems to show that teachers form differential expectations for student performance and success. Further, these expectations are often based on personal impressions and subjective assessments. Rosenthal and Jacobson's (1968) controversial study on self-fulfilling prophecies demonstrated that students who were identified to teachers as having academic potential later made significant academic gains. Brophy and Good (1970), in an extension of this research, found that students, for whom teachers held high expectations, scored higher on classroom performance and achievement measures, and received more praise and less criticism than the low expectation students. In addition, the high expectancy group more frequently initiated classroom and work related interactions, and were treated more favorably by teachers. Although the criticisms have been numerous (e.g., methodological problems, etc.), and the teacher expectancy effect has not been replicated in subsequent studies (e.g., Fleming & Anttonen, 1971; Jose & Cody, 1971) Rosenthal and Jacobson's research is important in pointing to factors which can influence teacher expectancies.

The self-fulfilling prophecy applied to an educational setting predicts that teachers form expectations based on their information about a child. This interpersonal expectation is assumed to influence the teacher's behavior toward the child. But, the manner in which interpersonal expectations are exerted is more subtle and complex than mere self-fulfillment. Rosenthal (1973) has proposed that teachers are more supportive, provide more differentiated feedback, teach more advanced materials, and facilitate pupil responding, to students for whom they hold positive expectations. The converse would be expected for those students for whom negative expectations are held. While the application of interpersonal expectancy, arising from the self-fulfilling prophecy, has been made most frequently to academic performance based on information about a student's ability, interpersonal expectations can arise from cues other than academic ability.

Physical attractiveness of the student appears to be a rather important factor influencing teacher evaluation. Clifford and Walster (1973) had a large number of fifth grade teachers predict IQ, educational potential, parent interest in school, and social status from a constructed student summary record of an above average student to which was attached a photo of a boy or girl. The photographs had been grouped into high or low attractiveness based on previous ratings of a group of judges. Fifth grade teachers predicted that the attractive children were more intelligent, would attain more education, and had parents who were more concerned about academic achievement than less attractive children. Attractive children were also rated as having better peer relations. These teacher expectations occurred for both male and female teachers and were not influenced by sex of the child. Attractive children have also been perceived as less likely to be antisocial in a study by Dion (1972) where college students rated behavior descriptions of attractive and unattractive seven-year-olds. Dion reported that attractive children who committed unacceptable acts were perceived as more honest and pleasant than unattractive children with similar behavior profiles.

Teacher expectations also may be influenced by sex of the student and conduct. Clifford and Walster (1973) found that sex of student did not affect teacher predictions of academic ability, although girls tended to be rated higher on peer relations. However, Brophy and Good (1970) observed that boys, regardless of teacher expectancy, received significantly more behavior criticism. McCandless (1970) has suggested that teacher grades are generally lower for boys and the relationship between IQ and teacher grades is also lower. Overall it appears that conduct does influence teacher evaluations and boys are generally viewed more disapprovingly than girls (e.g., Beilin, 1959; Lippit & Gold, 1959; Longstreth, 1968; Sears & Feldman, 1966). While sex of child mediates the influence of conduct, this sex effect is apparently absent for physical attractiveness according to the Clifford and Walster (1973) study.

The previous discussion suggests that physical attractiveness, sex of the child, and conduct are potential factors influencing teacher expectations, but to date no study has experimentally varied all three factors. Further, the previous research on physical attractiveness (e.g., Clifford & Walster, 1973) has attempted to control for the confounding effects of such factors

as hair color and glasses by using several photographs of a rated level of attractiveness. The effectiveness of this control is questionable.

The effects of sex of child, level of attractiveness, and conduct on teacher ratings of academic ability, post high school training, vocation, and leadership potential were investigated in the present study. On the basis of the previous discussion, the following predictions were made: (1) attractive children are rated higher on all measures than unattractive children; (2) children with good conduct are rated higher than children with poor conduct; (3) boys are rated lower than girls.

Method

Subjects

A total of 404 male and female classroom and special education (i.e., art, music, physical education) teachers in grades one to six, from a large school system in a metropolitan area, received a Student Progress Report with an attached color photograph of a boy or girl who had been previously rated as low, moderate, or high in physical attractiveness. The personal growth and attitudes section of the Student Progress Report were manipulated so that the conduct of the student was acceptable or unacceptable. A teacher evaluation form which asked the teacher to rate the student on several ability related dimensions accompanied the Student Progress Report. A total of 350 teachers (295 females and 55 males) or 86.6% completed the evaluation form. This group, consisting of classroom and special education teachers, were the subjects for the study. The characteristics of this sample were as follows: median age: males 30-35 years, females 36 years or older; median years experience in teaching: both males and females, 10 years or less; median education level: males, M.Sc. degree, females, 5-10 hours beyond a B.Sc.

Student Progress Report

This report was for an above average student (i.e., mostly A's and B's) in the basic subjects, such as reading, language, and mathematics, and special subjects, such as art and music. Grades in personal and social growth, work habits, and attitudes for the good conduct student were mostly A's and B's with some C's, whereas the poor conduct student's grades were C's and D's with a few F's. The attendance report of the two students also differed. The good conduct student's attendance record showed few absences or times tardy while the poor conduct student was frequently absent or tardy. These manipulations were designed to present a student who was either well adjusted to the school regime or had a conduct problem. The student's name on the report was that of a boy or girl in the same grade as that instructed by the teacher.

Student Photographs

A colored photograph (head and neck only) of a fifth grade boy or girl was attached to each Student Progress Report. Fifth grade students were selected for the photograph because facial features have largely stabilized by the fifth grade, but a fifth grader doesn't appear to be so disparate in maturity that a teacher would question the child's age after viewing his

photograph. The photographs had been previously rated for physical attractiveness by 20 college students using two procedures. The first procedure involved rating each photograph on a seven point scale ranging from 1—very unattractive, to 7—very attractive. Three groups of photos resulted—high, moderate, and low attractive. The second procedure was a Q sort technique in which the raters were asked to place each of the pictures in a low, moderate, or high attractiveness group. The agreement between the two procedures was nearly perfect. These procedures resulted in three boys' and girls' pictures in each of the three categories of attractiveness. The three pictures of a boy or girl within each level of attractiveness permitted some randomization in the photograph which was attached to the Teacher Evaluation Form and thus provided an additional control for those subtle features of attractiveness which were not controlled in the picture.

Teacher Evaluation Form

This form asked the teacher to rate the student on a five point scale for each of the following: I.Q. (1—an I.Q. of 90-100, to 5—an I.Q. of over 130); grade point average (1—a GPA of 1.5-2.0, to 5—a GPA of 3.5-4.0), percentile rank in class (1—below the 25th percentile, to 4—above the 75th percentile); highest level of education this student would attain (1—finish high school, to 6—M.D. or Ph.D. degree); vocation (1—laborer or domestic work, to 7—a profession); and leadership potential (1—little or none, to 5—very high). The teacher was also asked to write two summary statements about the student: one statement was to characterize the student with respect to personal attitudes, and the second statement was to evaluate the student in terms of work habits.

Procedure

Each teacher was given a brown envelope containing a letter, the Student Progress Report with attached photograph, the Teacher Evaluation Form, and a second brown envelope to use in returning the materials. The letter noted the ever present controversy concerning the usefulness of student report forms and indicated that the researchers were attempting to obtain some information from teachers about the usefulness of student report forms and the incorporation of this information into a permanent record file.

The teachers were asked to examine the attached Student Progress Report and to provide the information requested on the evaluation form. Each teacher was further informed that the student they were evaluating was a student in the same grade as they taught, from another school. Thus the teachers were led to believe that the Student Progress Report was for an actual student, not a fictitious person. The importance of a personal evaluation by the teacher and the precautions taken to insure his anonymity were stressed. The teachers were further instructed to place their completed evaluation and the Student Progress Report in the attached brown envelope and return the envelope to their school secretary.

Results

Since male teachers comprised only a small portion of the sample, a *t* test was used to determine whether sex differences between teacher ratings were present. The resulting *t* value was nonsignificant, so sex of teacher was not included as a factor in the analyses. Unequal N analyses of variance were used to evaluate the effects of physical attractiveness, sex of child, conduct level, teacher grade level, and the relationship of teacher characterization. Means of the ability measures for all analyses are presented in Tables 1-4.

The first analysis consisted of a series of 3 (level of attractiveness) X 2 (sex of child) X 2 (conduct level) analyses of variance on teacher ratings of I.Q., grade point average, percentile rank, level of training, vocational choice, and leadership potential. Conduct of the child was a significant determinant of teachers' ratings of I.Q. ($F=14.55$, $df=1/338$, $p < .0002$), percentile rank ($F=10.12$, $df=1/338$, $p < .0017$), level of training ($F=46.07$, $df=1/338$, $p < .0001$), and leadership potential ($F=175.74$, $df=1/338$, $p < .001$). The means for each of the measures, presented in Table 1, reveal that children with good conduct, regardless of sex and level of attractiveness, were consistently rated higher on ability measures, aspirations, and leadership potential, supporting the second prediction. The nonsignificant effects for attractiveness and sex of child are contrary to the predictions made with respect to these effects.

TABLE 1
ABILITY MEASURES FOR TWO LEVELS OF CONDUCT

Ability Measure	Good Conduct Mean	Poor Conduct Mean
Grade Point Average	3.67	3.34
Percentile Rank	3.49	3.24
Level of Post High School Training	3.61	2.75
Predicted Vocational Choice	5.24	4.15
Leadership Potential	3.75	2.49

A significant Sex of Child X Conduct interaction was present for predicted I.Q. rating ($F=3.64$, $df=1/338$, $p < .05$). The simple effects analysis showed that girls with poor conduct were rated as having higher I.Q.s than girls with good conduct ($F=4.35$, $df=1/338$, $p < .05$). The difference between good and poor conduct boys was nonsignificant ($F<1$), and sex differences between conduct levels also were nonsignificant.

Grade level of the teacher was added to the three previous factors in a second series of ANOVA's to examine rating differences between teachers in the various grades. Conduct was again a significant determinant of teacher ratings of ability measures. But teachers in the various grades

differed on their predictions of the child's level of training beyond high school ($F=4.35$, $df=2/313$, $p < .01$). Primary teachers predicted a lower level of post high school training than intermediate or special education teachers. The latter two groups did not significantly differ from each other. The teachers tended to predict higher levels of post high school training for boys ($F=3.16$, $df=1/313$, $p < .07$).

The interaction between conduct and grade level of teachers was significant for predicted vocational choice ($F=4.16$, $df=2/313$, $p < .01$) and leadership potential ($F=5.17$, $df=2/313$, $p < .006$). The interaction means are presented in Table 2. Simple effects analysis of the interaction for leadership potential showed that poor conduct students were rated as having lower leadership potential than good conduct students by primary teachers ($F=71.97$, $df=1/338$, $p < .001$), intermediate teachers ($F=36.06$, $df=1/338$, $p < .001$), and special education teachers ($F=14.45$, $df=1/338$, $p < .001$). A similar relationship was found for predicted vocational choice.

TABLE 2
MEASURES OF PREDICTED VOCATIONAL CHOICE AND LEADERSHIP POTENTIAL

Ability Measure	Good Conduct			Poor Conduct		
	Primary Mean	Intermediate Mean	Special Mean	Primary Mean	Intermediate Mean	Special Mean
Predicted Vocational Choice	5.32	5.14	5.26	3.78	4.59	4.41
Leadership Potential	3.82	3.74	3.58	2.28	2.65	2.89

The teachers' written descriptions of students with respect to personal attitudes and work habits were evaluated with a content analysis. Three categories of students resulted—Super-star, Fun-lover, and Rebel. A general description of the Super-star included such phrases and adjectives as positively oriented, happy, achievement oriented, well-accepted, dependable, out-going, independent, conscientious, cooperative, serious and mature. The fun-lover was described as social-oriented, courteous, pleasant, anxious to please, easy to get along with, needs external support, needs some improvement, and has some trouble following directions. The Rebel was characterized as disrespectful, slow, indifferent, rebellious, lacking self control, and fantasizes a lot.

A third series of ANOVA's assessed the effects of teacher descriptions of students' personal attitudes, sex of child, and level of attractiveness. Teacher descriptions of students significantly influenced ratings on grade point average, percentile rank, predicted vocational choice, level of post high school training and leadership potential (see Table 3). Mean comparisons, using a Newman Keuls analysis, revealed significant differences between the three groups for predicted vocational choice, level of post high school training, and leadership potential. The Fun-lover and

Rebel were not significantly different on measures of grade point average and percentile rank, but both groups were rated lower than the Super-star.

TABLE 3
ABILITY MEASURES FOR THREE CATEGORIES OF STUDENTS
(TEACHER CHARACTERIZATION--PERSONAL ATTITUDES)

Ability Measure	Super-star Mean	Fun-lover Mean	Rebel Mean	F	df	p <
Grade Point Average	3.74	3.46	3.27	7.19	2,247	.01
Percentile Rank	3.53	3.35	3.25	3.52	2,247	.05
Predicted Vocational Choice	5.36	4.78	3.90	19.65	2,247	.01
Level of Post High School Training	3.67	3.38	2.57	18.20	2,247	.01
Leadership Potential	3.70	2.77	1.41	129.76	2,247	.001

Teacher characterization of students' work habits and attitudes replaced personal attitudes in a fourth series of ANOVA's. Significant differences were found for grade point average and level of post high school training (see Table 4). Individual comparisons of means revealed that higher ability was attributed to the Super-star than to the other two groups.

TABLE 4
ABILITY MEASURES FOR THREE CATEGORIES OF STUDENTS
(TEACHER CHARACTERIZATION--WORK HABITS AND ATTITUDES)

Ability Measure	Super-star Mean	Fun-lover Mean	Rebel Mean	F	df	p
Grade Point Average	3.77	3.45	3.40	5.95	2,298	.01
Level of Post High School Training	3.79	3.05	2.76	18.54	2,298	.001

Discussion

The effect of teacher expectancy on predictions of children's ability was quite evident in the present study. However, teacher ratings were influenced more by conduct level of the child than physical attractiveness. Children with low grades in personal and social growth, work habits, and attitudes, indicating conduct problems, were predicted to have less ability and lower aspirations than children with acceptable conduct, regardless of their level of physical attractiveness or sex. If one assumes

that teachers are concerned with presenting subject matter content to the student, then those behaviors on the part of the child which facilitate teaching should be more highly valued (Beilin, 1959). Conduct of the child is one determinant of teacher effectiveness. Teachers know from classroom experience that teaching is a difficult task when problem children continually interrupt and interfere with subject matter presentations. Therefore, it is reasonable to expect that teachers may predict lower levels of aspiration for these children because of a related motivational problem. However, the problem child appears to bias the teacher to the extent that this child is also rated lower in ability. This would suggest that problem children not only fare less well in the classroom, but appear to have the stigma of a "self-fulfilling prophecy". Because the child is a problem child, one can't expect him to be successful in academic or vocational endeavors or to possess leadership ability.

The failure to replicate the attractiveness effect reported by Clifford and Walster (1973) was probably the result of several factors. Since the teachers in the Clifford and Walster study were not provided with information on the child's conduct, the attractiveness variable was not pitted against conduct, a most pervasive factor in teacher evaluation. Secondly, the Clifford and Walster study sampled only fifth grade teachers, whereas the present study used teachers in grades one through six. It is certainly possible that fifth grade teachers are more aware of physical attractiveness since fifth grade children are acquiring more adult-like features. Also, Clifford and Walster's sampled teachers from Missouri where student photographs are part of the student record. These teachers may have been more accustomed to attending to student photographs than the sample of teachers in the present study who were from schools where photographs were not attached to student records. Clifford and Walster used only the two extremes of attractiveness—high and low—while the present study incorporated a third level of moderate or average attractiveness which may have reduced the attractiveness effect. It is not clear from the Clifford and Walster study how divergent the two extremes in physical attractiveness actually were. This is one of the problems in comparing studies on physical attractiveness. If the end points of the attractiveness scale are not described in the research, one has no clear indication of the difference in physical attractiveness.

The pervasiveness of the child's conduct on teacher evaluations provides further support for the contention that interpersonal factors, such as conduct, warmth, and personality, are more influential determinants of teacher assessments than external factors such as physical attractiveness. Adams and LaVoie (1973b) have constructed a teacher expectancy model in which they propose that the teacher's initial evaluation is based on external observable cues such as race, sex, and physical attributes. But as teachers interact with students over a period of time, interpersonal factors, such as conduct, become more influential in teacher evaluation because these factors are given greater weight in the teacher's cognitive system. There is some empirical evidence to support this assumption. Adams and LaVoie (1973a) found that warmth of a model was more influential than physical attractiveness of the model in eliciting imitation behavior among

college students. Further, Berscheid and Walster (1973), in their review of the physical attraction literature, concluded that physical attractiveness exerts its greatest effect in the initial stages of an interaction between individuals.

Although one can argue that conduct is a correlate of the dependent measures since teachers often consider conduct in assigning grades, this premise is not well supported in the present study. All of the students, regardless of their conduct record, were above average students with respect to academic ability. The record presented to half of the teachers was one of an academically capable student who was experiencing some conduct problems. Thus, the teacher was not assigning a grade, rather the teacher was evaluating a record. The most parsimonious explanation would seem to be that in the presence of an equally or more reliable predictor, such as grades, conduct was the preferred predictor, indicating the presence of a teacher expectancy with respect to student conduct.

The prediction by teachers that poor conduct girls would be more intelligent than girls with acceptable conduct suggests that the passive, quiet girl is not viewed as possessing the intellectual capacity of one who perhaps is more assertive and less self-controlling. According to Parke (1969), girls who have high achievement motivation take on some characteristics of the male role because achievement motivation directed toward academic excellence is associated with the masculine role. Further, girls who exhibit high achievement motivation are more likely to have fathers who reward this type of behavior and mothers who are less nurturant, thus enhancing the attractiveness of the masculine role. Therefore, it seems likely that these girls would receive lower conduct ratings for opposite sex behavior. However, Levitin and Chanine (1972) reported that female first and second grade teachers, whose model years of teaching experience was 6-10, liked achieving girls better than achieving boys, suggesting a sex bias. This sex bias seemed to disappear when teachers rated the students on level of post high school training since boys were rated as more likely to pursue training. This rating may reflect the lower status of females in our culture and appears to support Bardwick's (1971) argument that girls who deviate from the stereotypic sex-role pattern are more likely to be higher in creativity and need for achievement than more traditional sex-typed females. It also appears that teachers, as socializing agents, tend to credit the male with higher instrumental behavior.

The research technique of asking teachers to evaluate unfamiliar students rather than their own students needs additional comment. While the latter procedure could have been used, the teacher evaluation would have been confounded by the prior categorization of each specific student in the teacher's cognitive system, thus reducing the validity of any effect attributed to conduct or physical attractiveness. Secondly, this procedure would have made the problem of controlling for differences in conduct and attractiveness very difficult. The real issue is the matter of external validity. That is, to what extent are the results from this procedure generalizable to the real classroom setting? If student records are important sources of information to teachers, then providing the teacher with the record of an unfamiliar student should elicit an evaluation not significantly

different from that which would result if the student was in the teacher's class. The use of photographs of children as stimuli for influencing assessments of the child has been demonstrated in a number of studies (e.g., Clifford & Walster, 1973; Dion, 1972). Further, Berscheid and Walster (1973) have shown that individuals' reactions are congruent with their behavior in a real life setting. Secondly, naturalistic observations of teachers' behavior in the classroom supports the contention that certain characteristics of the child do influence teacher behavior. On the basis of their observation of kindergarten, fourth, and seventh grade teachers, Lajba and Adams (1973) reported that teachers gave more supportive statements to children who were self-controlled, verbally expressive, and physically attractive. It is quite clear that teachers differentially reinforce those children who possess certain valued traits.

In retrospect, the apparent conclusion to be drawn from this study is that children who are achievement oriented, accepted, cooperative, dependable, and self-controlled are perceived by teachers to possess greater academic ability and more likely to achieve greater vocational success. The good conduct student is the recipient of the rewards associated with teacher expectancy.

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Teacher Attitudes and Cultural Differences

This paper is based on the assumption that a teacher must be prepared to deal effectively with students who are different, whether it be a question of socioeconomic level, race, color, or cultural background. Questionnaires were administered to teacher trainees in a B.Ed. program (Post B.A. or B.Sc.) to determine their attitudes to cultural deprivation and to assess preferences for teaching in schools with Canadian Indians, Métis, French-Canadians, and low socioeconomic level students. After factor analysis the results suggest that these students tend to agree with Reissman's views on the CD child, and in general do not have strong preferences about teaching in schools where the pupils are "different". Several indications suggested by the factor loadings for course content in educational psychology and sociology are discussed. (Dr. Hoxter is Professor of Educational Psychology at Queen's University, Kingston, Ontario.)

Introduction

Schools of education are frequently plagued with the complex problem of providing future teachers with the various skills and attitudes needed to meet a wide variety of school settings. The training programs can usually handle the narrow-based concern of "taking care of" the elementary candidate, the future physics teacher, the social studies teacher, or the physical education specialist. The question of primary concern in this regard is preparing a person to handle content. But, in recent years, the importance, or more pointedly the stress, seems to be going towards process as well as content. How does one get across certain concepts, and skills? Let's go one step further. How does one get across certain concepts and skills . . . to whom? The "whom" is looming large. The "whom" is the student. We are seeing an increasing concern for the student, his needs and concepts. We are beginning to differentiate between that content which was good for all students in the past, as opposed to how to design learning materials for "certain" students.

What seems to be happening is a trend to more personalization, and more individualization. We are entering an era of student-centered education. This means we are much more aware of differences in students'

needs. Teachers begin to see all children as being in need of meaningful curriculum and educational program; Faculties of Education are beginning to see students the same way.

Background Concerns

The foundation subjects in teacher education usually provide for background knowledge about students, their growth, development, social interaction, cultural origins and various aspects of likeness and differences. These subjects must provide an accurate, factual, and up-to-date view of the difficulties which have to be faced in the classroom situation. Who are the students? What are they like? What are their needs? Do I have a good understanding of their environment? Do I have the skills and attitudes to integrate the milieu of the students and the world they are preparing for?

Evidence from various sources across Canada urgently calls our attention to the presence of serious educational problems and an urgent need for immediate study, careful analyses and precise action. The now internationally acclaimed Hall-Dennis Report, *Living and Learning* (1968) is a far-reaching and comprehensive document providing a modern, scientific approach to the aims and objects of education in the schools of Ontario. A central theme of the report is a stress on individualizing instruction for all students, regardless of ability or origin. It points out that every individual has an equal right to access to the learning experience best suited to his needs. In the spirit and letter of the report, every child benefits from compassionate good teaching, adequate facilities, and understanding. It goes on to underline that every child in Ontario has a right to stand with dignity beside every one else in the human parade.

Several years ago a comprehensive blueprint was published to attempt to meet the needs of one million Canadian children. The blueprint is called *One Million Children*, published by the Commission of Emotional and Learning Disorders in Children. It is the result of a more than three-year study commissioned by various Canadian educational, welfare and mental health organizations.

What *are* the needs of these one million Canadian children—who represent 12% of all children up to age 19 and who require attention, treatment and care because of emotional and learning disorders? These are children who: (1) are neurotic or psychotic and who exhibit behaviour disorders, (2) have an overall learning deficit (retarded), (3) have specific learning difficulties and deficits, (4) have sensory or physical handicaps likely to lead to a secondary emotional or learning problem, (5) are judged to be delinquent, and who (6) have family or community experience which leads to cultural and emotional deprivation.

The Hall-Dennis Report lays stress on a compassion for all students, indicating that we care about those who may heretofore have been neglected. Part of the neglect lies in opportunity, or lack of it. As pointed out in a UNESCO report:

Educational provisions and opportunities have been and still are unequal. For a variety of reasons, many children are unable to profit fully from provisions which are available, many schools are unable to deliver appropriate educa-

tional programs, and many pupils are excluded from some aspects of the system (Passow, 1970, p. 15).

Passow seems to suggest that some pupils are being overlooked. Unfortunately, a segment of the population feeling this neglect is easily identifiable as "poor", "disadvantaged", or "culturally deprived". In countries outside Canada, learning problems are more clearly identified and more prevalent in children from "disadvantaged", "low socioeconomic", "poor", or "culturally deprived groups". According to the Eric Information Retrieval Center on the Disadvantaged:

The groups considered "disadvantaged" tend to be those of racial or ethnic minority group status, immigrants and in-migrants, and those of low socioeconomic or impoverished status (p. 55).

The Canadian scene is referred to by Adams, Cameron, Hall and Ping (1971) as follows:

The links between education and affluence, and lack of education and poverty, are almost absolute. The numbers are conclusive. At least two-thirds of the heads of low-income families have no more than elementary school education (p. 216). . . . Education, then, has failed as a weapon against the transmission of poverty from one generation to another, despite a recent surge of public spending on schools (p. 217).

There have been attempts to deal with this dismal picture. According to Andrews (1970), programs have been adapted to deal with the needs of different social groups. It may be asked, however, how extensive and how effective is this operation? In his view of emerging trends in the administration of Canadian School Systems, Andrews states that "the inner-city school is undertaking major revisions of its curriculum to provide for the special need of slum and immigrant children".

A more sombre view is sketched by Mann (1958) in his elaboration of the "Lower Ward of Toronto":

Situational factors are decisive in selecting population that is drawn to, and remains in The Lower Ward. The area's low social status, bleak physical appearance, confused moral climate, and residential and social instability tend to attract persons and families sharing one or more of the following characteristics: weak intelligence, poor physical health, low social or economic status, disorganized or unstable personalities, or strong feelings of social protest. Among these one finds the physically or mentally handicapped, the psychologically ill, the very poor, compulsory drinkers and alcoholics, deserted wives, common-law households, and other moral non-conformists, bootleggers, thieves, and families of mixed racial heritage (Mann, 1958, p. 140).

While many of the inner-city sections across the provinces may not be as forlorn as the "Lower Ward", the psychological, sociological, and economic problems present a common thread to be dealt with educationally. In 1951 the annual dropout rate from Canadian schools was one hundred thousand, of whom ten thousand were above average, sixty thousand average, and thirty thousand below average in general ability. The Canadian Research Committee on Practical Education in 1951 remarked: "Undoubtedly a great deal could be done to keep the average and above average in school longer". Opinions differ as to which group represents the greatest loss to the nation, but the total is indeed serious (Porter, 1965).

When we become aware of the fact that approximately one in nine persons in Canada is a postwar immigrant (Blishen, Jones, Kaspar, Naegle, and Porter, 1968) we see something of the picture of the school enrolment breakdown. It has been found that the pattern is one of a greater exodus to the suburbs of middle and upper income families while the inner-city becomes a mosaic of lower cultural and economic characteristics (Hoxter, 1972). Additional sentiments are echoed by Adams, Cameron, Hall, and Ping (1971) when they say:

The various improvements in the educational system that came about with the increased demand of the 1950's and 1960's has not, then, done much good for the children of the poor. Schools in poor areas are inadequate; schools in depressed provinces are starved for funds; almost no attention is paid to the special needs of the poor, white, red, yellow, brown or black; and the result has been the continuation of those barriers that stand between the poor child and a decent education (p. 225).

Sylvia Goldblatt (1968) described education in two public housing developments built in the suburbs of Metropolitan Toronto. She found that teachers had many professional problems which presented new difficulties for them. They were not used to the shorter interest span of these low-income children. As she described the teacher's plight:

Teachers found an unfamiliar set of behaviour problems. They encountered children with stories of events on the home-front which had a disruptive influence; father in jail, common-law relationships, several children in one family with different fathers (p. 35).

The Problem

It seems to follow from the above that future teachers must be prepared to deal with students who differ from them in socioeconomic level, race, color, religion, or cultural background. A central question is: how much does the student teacher know about the kinds of children he may be expected to teach? In Canada, it can be predicted that the schools will continue to have a high percentage of white Anglo-Saxon students whose parents have spoken English for several generations, and who come mainly from middle and lower-middle class economic levels. However, we can recognize other categories which may become numerically significant, depending on geographic location. We can identify schools with a high percentage of students from various ethnic groups such as: Canadian Indians, Métis, French-Canadians, Eskimos, and several others.

Groff's Study

A possible starting point in focusing attention on this problem of preparing student teachers to teach a wide range of students is to determine existing student teacher attitudes. An interesting study was carried out by Patrick Groff (1964). Groff's efforts were directed exclusively to studying the opinions of teachers about culturally deprived (CD) children. His approach involved submitting 78 key statements from "The Culturally Deprived Child", by Reissman to teachers of culturally deprived children. The teachers indicated the extent of their agreement or disagreement with the statements. Groff's study is especially interesting and important because it investigated two crucial questions: (a) How close are present-day teachers

of CD children to the levels of understanding and acceptance demonstrated by the ideal teacher of the CD child Reissman describes? (b) With how many of the changes in school curriculum and organization proposed in the book do they agree?

The seventy-eight statements abstracted from the book were arranged into four general categories: (a) background and personality of the CD child, (b) the teacher of the CD child, (c) classroom procedures and pupil management techniques for the CD child, and (d) the curriculum, school organization and school administration in the CD school. Each teacher of CD children was requested, first to read each statement, and then, on the basis of his experience with CD children to indicate for each statement that:

- 5—He agreed entirely with it.
- 4—The statement was more true than false.
- 3—It was as true as it was false, or vice versa.
- 2—It was more false than true.
- 1—He disagreed entirely with it.
- 0—He had not enough knowledge of the matter to respond.

Groff found that 19 of the statements about CD children turned out to have negative ratios, while 59 statements were found to have positive ratios. Groff decided to pool the percentage of teachers who responded 1 or 2 for each statement and to record this as the percentage who disagreed with the statement. Similarly, the percentages who chose 4 or 5 for each statement were recorded as agreeing. The ratio of responses 4 and 5 to responses 1 and 2 was then calculated for each statement. To take an example . . . “The CD child typically comes from a poverty stricken home”. In Groff’s study, 69.2 percent of the teachers responded either 4 or 5, while 29.4 percent responded either 1 or 2. The ratio of teachers who agreed to those who disagreed with the statement is 2.4 to 1. A positive ratio therefore indicates the degree to which more teachers agreed rather than disagreed with the statement. A negative ratio means that more teachers disagreed than agreed with the statement. Groff felt that his study was a “grass roots” teacher validation of the central ideas of Reissman’s work on cultural deprivation and created fresh insights, while it raised new questions (Groff, 1964, p. 64). These teachers were disposed to accept Reissman’s model teacher, curriculum, and school for the CD child.

The Present Study

In this investigation it was decided to replicate Groff’s work and make a few changes and extensions. Groff’s sample was drawn from teachers in service. This study drew from students in a B.Ed. course who have a prior B.A. or B.Sc. An additional inventory was devised and administered along with the Groff survey. This inventory was included to give a picture of student teacher attitudes with respect to teaching situations in schools where a large percentage of the following categories of students might predominate: Canadian Indian, Métis, French-Canadian, Eskimo, Black, Italian, Ukrainian, New Canadian, and Low Socioeconomic level. The inventory asked the students to indicate their preference for teaching in

the nine categories based on a five point scale of preference: 1—I would strongly object to teaching in this kind of school, 2—I would mildly object to teaching in this kind of school, 3—I would have no objection nor inclination to teach in this kind of school, 4—I would prefer to teach in this kind of school, 5—I would strongly prefer to teach in this kind of school.

The results of the two approaches conceivably would shed light on student attitudes toward Canadian educational, cultural, ethnic, and socioeconomic concerns. Hopefully, data could be utilized to enhance new ways of looking at foundations curriculum input in Faculties of Education especially within the context of Educational Psychology.

Methods and Sample

Groff's list of 78 key statements about culturally deprived children were administered to 200 students in a one year B.Ed. program. The inventory was separated into two sections designated green and red. The green section was identical with Groff's inventory. In the red version, the questions were reversed, for purposes of test analysis. The following data, however, is concerned with results obtained from the administration of the standard Groff inventory to 135 B.Ed. students.

A short questionnaire was also administered to determine attitudes to nine different ethnic, and socioeconomic school enrolments.

Results

Data will now be reviewed relating to the replication aspects of the Groff study and brief comparisons between the U.S. and Canadian results, the positive-negative question response ratios, correlations, and some preliminary observations from a factor analytic review.

In Groff's study 59 of the 78 statements were found to have positive ratios. These ratios ranged from 45.3 to 1 agreement with the statement: "Despite his overt hostility and defiance, the CD child seeks respect from his teachers" to a 1.1 to 1 agreement with the statement: "Permissiveness, accent on self, and introspection are contradictory to the culture of CD child". Nineteen of the 78 statements turned out to have negative ratios, that is more teachers disagreed than agreed with them.

In our sample, as in Groff's study, 19 of the 78 statements had negative ratios. The negative ratios ranged from -1.02, the mildest disagreement to -15.60, the strongest disagreement. The positive ratios were found to range from 1.05 to 120.00. The strongest agreement was with the statement: "The teacher of the CD child should not equate his intelligence with his speed, verbal facility, or test-taking skills". The mildest agreement was found in the statement: "The teacher of the CD child should not reason at length or argue with him about rules or regulations that have been set".

The questions with strong positive ratios are given below (ratios shown in brackets). These ratios are the highest of the 59 statements found to be in agreement with Reissman's views. The questions representing strong positive ratios were:

24. The teacher of the CD child should not equate his intelligence with his speed, verbal facility, or test-taking skills (120.00).

45. Despite his overt hostility and defiance, the CD child seeks respect from his teacher (118.00).
76. "Consulting" teachers skilled in handling the specific needs of CD children are needed (61.50).
37. The teacher discriminates, frequently unintentionally, against the CD child (38.33).
75. Smaller classes for CD children are imperative (38.00).
36. It is as important to study the rejecting attitudes of the teacher toward the CD child as the child's home environment (37.33).
15. Ordinary I.Q. tests do not validly predict the capacities of the CD child (23.60).
21. The CD child uses a physical rather than a word style of problem solving (23.00).
39. Teachers have too many negative images of the CD child (22.40).
70. Teacher education programs should have special courses on teaching the CD child (20.17).
43. The teacher should not try to make the CD child over into a replica of a middle-class child (19.00).
23. The teacher overlooks and underestimates the CD child's skills and modes of intellectual functioning (16.00).
20. The CD child is insecure and unsure of himself in the academic problem-solving situation (15.00).

The strongest negative ratio was found in answer to the statement: "The CD child does not like to work in short spurts with frequent breaks". The mildest disagreement found was to two questions which were: (a) "Talk, reading, and intellectualism are regarded by the CD child as feminine activities," and (b) "The CD child is anti-intellectual and, therefore sees little value in books and discussions". The following questions were recorded as having negative ratios:

65. The CD child does not like to work in short spurts with frequent breaks (-15.60).
51. Teachers of the CD child should often give suggestions and demonstrations of their superior physical strength (-11.39).
4. The CD child at home is generally not expected to assume household responsibilities (-7.73).
49. The teacher can not take a gentle approach with the CD child (-6.21).
48. The CD child needs a highly structured classroom with unvarying routine and strict order (-4.33).
77. Teachers of CD children should receive higher pay than teachers of middle-class children (-3.29).
40. The white teacher should not treat the Negro CD child with informality. He sees this as disrespect (-2.41).
68. The best teacher of the CD child is one who identifies with the underdog (-2.25).
9. The CD child lacks a sense of competition in school (-1.81).
58. The CD child likes best the three R's, and likes least the social studies, literature, and the arts (-1.74).
60. Group projects and planning with CD children result in much commotion and many discipline problems (-1.67).

26. The CD child has a colorful, free associative feeling for metaphor in language (-1.50).
73. The school should provide an extended school day for the CD children conducted by others than the regular teachers (-1.36).
66. For CD children, the present system of personal marks and like comparisons should be replaced by group competition (-1.35).
3. Permissiveness, accent of the self, and introspection are contradictory to the culture of the CD child (-1.27).
64. Teaching machines and programmed learning should be lowered even though he has basic academic deficiencies (-1.24).
10. Talk, reading, and intellectualism are regarded by the CD child as feminine activities (-1.02).
11. The CD child is anti-intellectual and, therefore, sees little value in books and discussions (-1.02).

In comparing the results of disagreement with Reisman's views, it was found that there were fifteen statements common to the Canadian and United States samples. These questions and their category were:

The Culturally Deprived Child

3. Permissiveness, accent of the self, and introspection are contradictory to the culture of the CD child.
4. The CD child at home is generally not expected to assume household responsibilities.
9. The CD child lacks a sense of competition in school.
10. Talk, reading, and intellectualism are regarded by the CD child as feminine activities.
11. The CD child is anti-intellectual and, therefore, sees little value in books and discussions.
26. The CD child has a colorful, free associative feeling for metaphor in language.

The Teacher

40. The white teacher should not treat the Negro CD child with informality. He sees this as disrespect.
68. The best teacher of the CD child is one who identifies with the underdog.

Procedures

51. Teachers of the CD child should often give suggestions and demonstrations of their superior physical strength.
64. Teaching machines and programmed learning should be especially effective with the CD child.
65. The CD child does not like to work in short spurts with frequent breaks.
66. For CD children, the present system of personal marks and like comparisons should be replaced by group competition.

The 78 items in the Reissman questionnaire were correlated and then factor analyzed. Twenty-seven factors with eigenvalues greater than one were extracted, accounting for 71% of the total variance. After a quartimax

procedure, the first seven factors were selected, as these lend themselves to meaningful interpretation. These seven factors account for 21% of the total variance.

FACTOR 1: Concrete, physical orientation of the CD child

- 6. The CD child has great respect for physical prowess.
- 7. There is practically no interest in knowledge for its own sake by the CD child. Interest is only in terms of practical or vocational usefulness.
- 8. The CD child does not view education as an opportunity for self expression, self realization, personal growth, etc.
- 11. The CD child is anti-intellectual and, therefore, sees little value in books and discussions.
- 17. The CD child does not respond well to being challenged academically.
- 34. The teacher should have a sympathetic respect for the culture of the CD child.

FACTOR 2: Motivational features of the CD child

- 25. The CD child has a proclivity for persisting along one line of interest or activity.
- 30. The CD child is afraid of failure, and consequently is defensive about criticism.
- 56. The CD child expresses himself best in unstructured, spontaneous situations.
- 57. The CD child has a great respect for physical science.
- 58. The CD child likes best the three R's, and likes least the social studies, literature, and the arts.
- 64. Teaching machines and programmed learning should be especially effective with the CD child.
- 65. The CD child does not like to work in short spurts with frequent breaks.

FACTOR 3: Teachers' negativism towards the CD child

- 23. The teacher overlooks and underestimates the CD child's skills and modes of intellectual functioning.
- 37. The teacher discriminates, frequently unintentionally, against the CD child.
- 38. Teachers believe the CD child lacks intellectual curiosity.
- 39. Teachers have too many negative images of the CD child.
- 42. Teachers tend to talk down to the CD child—to speak his language.

FACTOR 4: The peer group culture of the CD child

- 5. The CD child peer group rejects the child who pleases the teacher with his conformity, dependence, neatness, and non-aggression.
- 6. The CD child has great respect for physical prowess.
- 10. Talk, reading, and intellectualism are regarded by the CD child as feminine activities.
- 11. The CD child is anti-intellectual and, therefore, sees little value in books and discussions.
- 12. The teacher of the CD child should expect initial hostility and non-acceptance from him.

52. CD children will make an organized, cooperative effort to break the new teacher or to see how much he can stand.

FACTOR 5: The CD child in school

12. The teacher of the CD child should expect initial hostility and non-acceptance from him.
28. The greatest handicap of the CD child is his formal verbal inadequacies.
59. In general, the reading textbooks (readers) are out of tune with the interests and background of the CD child.
62. Usual ways of teaching grammar and language usage are inappropriate with CD children.

FACTOR 6: The need for structure and discipline of the CD child

46. The teacher of the CD child must be definite and authoritative. Strong external demands, firmness, and rules are needed.
47. The teacher of the CD child should not reason at length or argue with him about rules or regulations that have been set.
48. The CD child needs a highly structured classroom with unvarying routine and strict order.
52. CD children will make an organized, cooperative effort to break the new teacher or to see how much he can stand.
71. Teachers of CD children should stay with the same class for three years.

FACTOR 7: The positive aspects of the CD child

14. The CD child's attitudes toward formal education are more positive than is generally believed.
15. Ordinary I.Q. tests do not validly predict the capacities of the CD child.
16. The I.Q. of the CD child can be raised if he is shown how to answer I.Q. tests.
24. The teacher of the CD child should not equate his intelligence with his speed, verbal facility, or test-taking skills.
68. The test teacher of the CD child is one who identifies with the underdog.
72. There should be more teachers of CD children from the same racial or cultural minorities as the children.

The School Preference Inventory

The *School Preference Inventory* contained nine questions about teaching in various types of schools each of which was defined in terms of containing a large percentage of Canadian Indian, Métis, Eskimo, or other minority students. These types have been referred to previously.

The student teachers were asked to indicate their preferences in these schools using a five point scale ranging from strong objection (1) through no objection (3) to a strong preference for such a school (5).

Frequencies

Table 1 provides a frequency count of the responses to the *School Preference Inventory*.

Teacher Attitudes and Cultural Differences

TABLE 1
FREQUENCY SUMMARY OF STUDENT PREFERENCES
FOR THE VARIOUS TYPES OF SCHOOLS

Variable	Category					
	Blank	1	2	3	4	5
1. Canadian Indian	2	0	7	100	20	6
2. Metis	1	1	9	100	19	5
3. French-Canadian	1	2	15	77	31	9
4. Eskimo	1	0	11	96	19	8
5. Black	1	1	12	96	20	5
6. Italian	1	1	15	96	17	5
7. Ukrainian	2	1	6	103	19	4
8. New Canadians	1	1	14	64	41	14
9. Low Socioeconomic	1	2	15	64	38	15

As can be seen from this table, the student teacher responses tended to follow a fairly normal distribution with the greatest number of choices falling in Category 3, "I would have no objection, nor inclination to teach in this kind of school". Correlations were calculated and as Table 2 indicates, the highest correlation for school preferences is that between variable 1 (Canadian Indian students) and variable 4 (Eskimo students). The lowest correlation can be found between variable 3 (French-Canadian students) and variable 5 (Black students).

TABLE 2
INTERCORRELATION MATRIX OF THE NINE SCHOOL PREFERENCES

	1	2	3	4	5	6	7	8	9
1		.699	.421	.746	.556	.443	.440	.430	.476
2			.603	.657	.513	.520	.455	.384	.484
3				.424	.341	.586	.426	.533	.394
4					.608	.436	.401	.357	.407
5						.456	.426	.380	.486
6							.654	.622	.387
7								.522	.387
8									.427
9									

Discussion

The findings of this study confirm some previously held ideas about attitudes to culturally deprived children, and open up additional new concerns for those concerned with the training of student teachers.

Generally speaking, the teacher trainees agreed with most of the attitudes toward the CD children revealed in the Groff study. The Canadian sample disagreed with exactly the same number of statements that the U.S. sample disagreed with. In terms of teacher preference for the nine categories of minority culture groups or low socioeconomic status students, the sample in this study did not reveal biased or prejudicial teaching pre-

ferences. Frequency data indicated that the student teachers expressed the view that they had neither an objection, nor an inclination, to teach in any of the minority schools.

Factor analysis revealed seven factor-trends which might be of value in relation to decisions about curriculum input from foundation subjects. Student teacher attitudes toward CD students can be improved with more course work in CD children's learning styles, goals for the future and patterns of child rearing and educational values. The question of language learning and cognitive ability in CD students is still in need of further research and clarification. The problem of intelligence evaluation and planning of curricula for culturally different (deprived) children ought to receive greater attention during the training of teachers. Finally, it would be desirable to investigate ways of changing the CD students' negative perceptions of academic activities and education, if these in fact exist. This area of teaching methodology should certainly figure largely in the student-teacher training program.

In conclusion, it is felt that this study may suggest the possibility of directing research efforts towards enquiring into teacher attitudes to determine some direct ways of helping individual learners become more proficient and appreciative of school. Perhaps one avenue of investigation would be to reverse course, and determine from CD and other minority students what kinds of teacher attitudes and understandings they feel are important to their making progress and achieving satisfaction in the school system.

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J. W. FRIESEN

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Education and Values in an Indian Community

This paper deals with cultural values as these are identifiable in an Indian community in Southern Alberta. A value scale is used to measure differences between four groups: (i) Indian and non-Indian pupils in the Calgary area (Blackfoot and Stony Indians); (ii) Blackfoot Indian pupils and their teachers; (iii) Blackfoot Indian pupils and their parents; and (iv) Blackfoot Indian pupils attending integrated schools and Blackfoot Indian pupils attending all-Indian schools. (Dr. Friesen is Associate Professor in the Department of Educational Foundations, Faculty of Education, The University of Calgary.)

Values are conceived to be at the base of human thought and conduct and may be defined as concepts of the desirable whether in implicit or explicit terms and whether individually or corporately determined (Kluckhohn, 1963). A significant amount of research has been conducted in the area of value study in recent years in both the U.S.A. and Canada utilizing the methodology of Florence Kluckhohn which was designed specifically for measuring minority group values (Kluckhohn and Strodtbeck, 1961). A variety of writers other than Kluckhohn have also developed instruments for measuring values but use of the Kluckhohn instrument has resulted in the completion of a number of studies thereby permitting comparisons between the groups studied and contributing toward the gradual build-up of a reliable body of knowledge on the subject of values (Kitchen, 1961; Gue, 1967; Parry, 1967; Moore, 1968; Bryans, 1971).

Generalizing from particular value studies to communities other than the one in which such research was accomplished is an extremely complex matter and research workers have usually been cautious to point out limitations and delimitations of their work. Increasing emphasis on value study in parallel communities has continued over the years, however, and what has emerged is a marked degree of similarity of values between communities which might basically be judged sociologically alike. This is especially true of the culture of North American Indians whose values were first clarified by anthropologists such as Robert Lowie, Adamson

Hoebel, Robert Redfield, and Ruth Benedict, and later examined by other writers in relation to their educational implications (Burger, 1968; King, 1967; Wolcott, 1967; Friesen, 1971). The present study is an extension of this kind of research, directed toward a specific Indian community, utilizing a values instrument other than the Kluckhohn scale, yet deriving results which are comparable with those studies mentioned previously.

Nature of the Study

Particular value orientations of specified subcultural groups are often cited as the cause of their failure with, or disregard for, standardized patterns of behavior determined by a dominant cultural group. Explanations for the low achievement of Indian pupils, compared with their non-Indian peers, usually include reference to the "language barrier", as well as other indicators of cultural (and value) differences (Gue, 1971). What is often overlooked, however, is a recognition that value differences might exist between groups of people *within* a particular Indian community which may further complicate educational experiences and show some further and even more intricate educational implications. This study seeks to examine that phenomenon.

The setting for the study was the surrounding Calgary area. Testing was done in schools near the city, including two all-Indian schools and one city school with Indian pupils enrolled. Although the Indian sample included pupils from two Indian bands, Blackfoot and Stony (originating from Bearspaw, Chiniquay, and Wesley), the major findings of the study involve mainly parents and pupils from the Blackfoot band. The comparisons reported here include the following groups:

- 1) Indian and non-Indian pupils in the Calgary area (Blackfoot and Stony Indians);
- 2) Blackfoot Indian pupils and their teachers;
- 3) Blackfoot Indian pupils and their parents;
- 4) Blackfoot Indian pupils attending integrated schools versus Blackfoot Indian pupils attending all-Indian schools.

The first comparison, involving Indian and non-Indian pupils, provided a frame-work for the study by demonstrating very basic value differences between the two groups. A further rationale for the selection of groups included these aspects:

First, differences between value-orientations of Indian and non-Indian children might be illustrated or differentiated between kinds of socialization measures practiced in today's schools in terms of pupil failure or success. Such differences might also provide some reasons for the enthusiasm or general disposition of pupils toward schooling, or reveal poles of importance on the part of the Indian subcultural value system.

Second, a study of value orientations could reveal the nature of the direction of value change within a cultural value complex. In comparing the value orientations of pupils with parents it might be possible to determine wherein pupils differ from their parents in terms of attitudes or aspirations or in the valuing of particular processes, goods, or services. Similarly, when compared with their teachers, it may be possible to see to what extent pupils are prey to the influence of their teachers in terms of

values; the results of this investigation could have serious implications for intercultural educational situations.

Third, since a variety of factors influence the formation of particular values, a break-down of the nature of school environment (integrated schools versus those enrolling only pupils of one specific subcultural group), may reveal some rather startling consequences. Although only one such factor was ferreted out for examination in this research it is not possible to state to what extent its exclusive influence may be felt.

Fourth, comparisons between the groups indicated may provide some indication as to the direction of socialization on the part of minority group pupils in terms of their own cultural affiliation versus that of the dominant culture. If it can be ascertained that specified forms of cultural behaviors are better reinforced in sequestered school environment versus those having a public format, then the implications for future educational planning are unclouded. Still, the nature of educational philosophy with regard to the pluralist-homogeneous continuum will first need to be clarified. The nature of these aspects of the research will become clearer as the data are presented (Friesen, 1970).

The Instrument

The instrument selected for this study was devised by Audrey James Schwartz for research conducted in 1967 under the title, "Affectivity Orientations and Academic Achievement of Mexican American Youth". The intent of that study was to explore four basic components of a value situation in the southwestern United States: (1) the ways and to what extent Mexican American and Anglo-American pupils differ from one another in affectivity orientations and in academic success; (2) the ways and to what extent Mexican Americans differ from one another in affectivity orientations and in academic success; (3) to what extent general theories of the relationship between affectivity orientations and achievement are applicable to the educational context, and which affectivity variables are most important to academic success; and (4) if affectivity orientation variables differ in their effect upon achievement, can these differences be explained in the light of existing sociological theory (Schwartz, 1967). Although the theoretical hypotheses of Schwartz's study were not pursued in the present research the objectives were considered sufficiently parallel to adopt the instrument. Conditions in Mexican American communities in the southwestern United States are, in many ways, similar to those in Indian communities in Western Canada. The minimal amount of formal education received by Mexican Americans, the high drop-out rate of those who do attend school, severe economic conditions and the like, attest to the plight of these people. Even when assimilation of values does occur, problems of Mexican Americans in the larger community are not resolved. Here again, the situation is parallel to that of the Canadian Indian.

The instrument devised by Schwartz contains forty items, thirteen of which pertain directly to the school situation; others refer to family and peer relationships within a general educational context. In the present study the instrument was slightly modified when administered to parents

and teachers; the language was put in the third person instead of in the first person. The specific areas of value-orientations probed by the Schwartz instrument comprise the following:

	<i>Number of Items</i>
1. Faith in human nature	3
2. Formal school compliance	3
3. Futuristic orientation	3
4. Independence from peers	4
5. Instrumental orientation scale	3
6. Orientation to family authority scale	4
7. Occupational values: reward orientation scale	4
8. Occupational values: social orientation scale	2
9. Expressive orientation scale	4
10. Index of autonomy	3
11. Index of idealized school goals	3
12. Index of self-esteem	4
	—
	Total = 40 items

In order to facilitate a standardized response tabulation, questionnaires were designed with three possible alternatives, “strongly agree, slightly agree, disagree”. Three categories were thought to be sufficient because pupils involved in the study were from grades six to nine; thus the range of choices would require sufficient discrimination on the part of younger pupils. The administration of the questionnaires was carried out in the various classrooms by the teachers; forms completed by teachers were mailed by them to the author; Indian parents were interviewed by an Indian parent.

Interpretation of Data

In this section we will examine the data in terms of three comparisons: Indian and non-Indian pupils, Blackfoot Indian pupils and their parents, and Blackfoot Indian pupils and their teachers. In discussing each comparison, a list of value categories will be given indicating the number of items in each category which indicated significant differences. Chi-square and Gamma measures were used, items being declared significant at the .05 level.

Indian and Non-Indian Pupils

In comparing Indian and non-Indian pupils at least half of the items in seven of the twelve categories were significant. These may be identified from Table 1.

The following conclusions may be drawn: Indian pupils scored *lower* on the following sub-scales: faith in human nature; interest in future planning and life expectations; education as instrumental to later success; and self-esteem. They scored *higher* on these items: independence from peers; respect for family authority; and faith in occupational rewards.

The above results are supported by other research dealing with the

TABLE 1
VALUE ORIENTATIONS: BLACKFOOT AND STONY INDIAN vs. NON-INDIAN STUDENTS

Value Category	Number of Items Showing Significant Differences
Faith in human nature	3/3
Futuristic orientation scale	3/3
Independence from peers	3/4
Instrumental orientation scale	2/3
Orientation to family authority scale	3/4
Occupational values: reward orientation scale	4/4
Index of self-esteem	3/4

Indian situation. Burger, for example, drawing together some salient features of North American Indian value systems observes:

He probably doesn't trust middle class Yankees, he has low aspirations, he is probably ready to follow a tradition of cooperativeness and mutual aid (within his own group, not necessarily with the school system), and he is probably mature and self-reliant (Burger, 1968, pp. 225-226).

Similarly, Wolcott notes that Kwakiutl children attend school reluctantly and ritually; school is unrelated to their values, interests and aspirations. When they do come to school their participation is analogous to travelling on someone else's boat; one gets on, sits patiently during the long slow ride, and eventually gets off. Age sixteen is the destination of the educational journey (Wolcott, 1967). The upshot of these observations is an underlining of the sociological fact that schools are primarily designed to accommodate pupils from dominant groups in society; they contain little adaptive features for subcultural groups. Thus the interest of the minority child is not whetted, possibly contributing to a lower concept of self-esteem and faith in human nature, and a disillusionment with the instrumental value of education in terms of later success.

Blackfoot Indian Pupils and Their Parents

The sample of Indian parents included forty adults from the Blackfoot Indian reserve located some sixty miles east of Calgary. The results of interviews with the parents, using the same questionnaire as was administered to pupils, were compared with the results of the Blackfoot pupils drawn from the total sample of 110 Indian pupils (Table 2). Seventy-one pupils were identified as Blackfoot. It should be noted that in eight of the twelve categories at least half of the items demonstrated significant differences.

Summarizing the basic differences: Indian pupils had *lower* scores in the following areas: faith in human nature; respect for family authority; self-esteem. The parents declared themselves of the opinion that their children were free to choose their friends, whereas the pupils did not perceive themselves to be as free as their parents believed. Indian pupils scored *higher* than their parents in the following areas: confidence in futuristic orientation; independence from peers; reward orientation of occupations; and expressive orientation of the school.

Education and Values in an Indian Community

TABLE 2

VALUE ORIENTATIONS: INDIAN PARENTS AND PUPILS

Value Category	Number of Items Showing Significant Differences
Faith in human nature	2/3
Futuristic orientation scale	3/3
Independence from peers	3/4
Orientation to family authority scale	2/4
Occupational values: reward orientation scale	3/4
Expressive orientation scale	3/4
Index of autonomy	3/3
Index of self-esteem	2/4

Blackfoot Indian parents: n = 40

Blackfoot Indian pupils: n = 71

Some of the differences noted are perhaps to be explained in terms of general differences between parents and offspring regardless of cultural uniqueness; for example, parents expressed a greater preference for family authority than children, and children expected more in terms of occupational rewards than parents. The relatively pessimistic outlook of parents towards the future is perhaps indicative of current Indian outlooks on the future development of their cultural heritage. For example, the Indian pavilion at the recent Canadian Exposition demonstrated the manner in which Indians of Canada face the future; it supplied ample references to past negative treatment of Indians by governments and citizens alike (Alexander, 1969). The same reasoning may apply to the question of self-esteem which Indian pupils demonstrated in greater degree than their parents.

Differences between parents and children are also to be anticipated in the light of social change and value shifts. That the school is a vital factor in developing change through formal socialization is a fairly consistent phenomenon. In intercultural education which involves the mingling of one cultural group with another in an educational setting, it is to be expected that radical modifications will occur. The basic point to be kept in mind however is this: Does the school have the right to create value differences between parents and their children? This question cannot be answered as a single legal question; the social and cultural effect of the school is more meaningfully investigated from a philosophic point of view. In other words, the important question is: What does the school intend to produce by way of a well-educated minority child?

Blackfoot Indian Pupils and Their Teachers

The schools from which the sample of teachers was taken drew in Indian children from the Blackfoot Indian reservation in their vicinity. Comparing pupil values with those of their teachers gives some indication of the influence teachers might have in the area of value development, particularly in relation to the influence of the parent sample. In a study in the Northland School Division of Alberta, Gue discovered that

fourteen year old Indian pupils tend to disregard non-Indian values after having "tried them out" for a number of years (Gue, 1967). The implications of Gue's research are that teachers *do* influence Indian youth values, but not necessarily permanently.

The differences between Indian pupils and their teachers found in this survey relate to four areas, shown in Table 3.

TABLE 3
VALUE ORIENTATIONS: INDIAN PUPILS AND THEIR TEACHERS

Value Category	Number of Items Showing Significant Differences
Faith in human nature	2/3
Futuristic orientation scale	2/3
Occupational values: reward orientation scale	2/4
Index of self-esteem	2/4

Blackfoot Indian pupils: n = 71

Teachers: n = 12

The interpretations of the above items is as follows: Blackfoot pupils, compared to their teachers, showed *lower* scores in faith in human nature; future orientation; self-esteem. Indian pupils' scores were *higher* only in the area of expectancy of occupational rewards.

The Integrated School as a Factor

To investigate the influence of a particular school environment as a factor in value-formation, the scores of Indian pupils in integrated and non-integrated schools were analyzed separately. Differences were observable in four value areas (Table 4).

TABLE 4
THE INTEGRATED SCHOOL AS A FACTOR

Value Category	Number of Items Showing Significant Differences
Faith in human nature	2/3
Formal school compliance	2/3
Orientation to family authority scale	3/4
Occupational values: reward orientation scale	3/4

Indian pupils in integrated schools: n = 38

Indian pupils in non-integrated schools: n = 72

Pupils in integrated schools revealed: more faith in human nature; more tendency to comply with school expectations; less concurrence with family authority; lower expectation of reward in occupational values.

Reasons could be elaborated to explain these differences but they would be little more than speculation. If an all-Indian school reflected the values of the Indian community, such traits as the following might be expected:

more respect for family authority, less stress on school regulations, and a less realistic concept of occupational expectations than in society at large. The attitude towards human nature would need to be explained in terms of the "mood" of the particular school environment. Another hypothesis, more particular to this situation, is the nature of Indian mistrust of non-Indians; it is possible that Indian pupils lose some of this mistrust when they attend integrated schools.

The question of pluralism arises from this study. There is not sufficient evidence to suggest that integrated schools are a threat to Indian culture since the data are by virtue of the fact that we used only a single instrument. This question has been raised in other studies however. The disappearance of pluralism is seen to be inevitable by some social scientists. This serves the function of assimilation as well as being a salve for the conscience of the majority groups (Itzkoff, 1969). Should such a condition arise it may well demand a kind of democratic participation in which some minorities are not prepared to participate, i.e. there may be some issues or concerns of society which some minorities prefer to ignore. This question needs to be examined concurrently with the issue of uniqueness, parallels, and rights of each minority group.

Conclusions of the Study

The major findings of this research will now be summarized.

(1) In relation to non-Indian children, Indian pupils exhibited a tendency for reduced confidence in human nature, in the future, and in self-esteem. Their value orientations tended to reveal traditional stances on family authority and "living for the present".

(2) There appears to be some support for the hypothesis that schooling offers alternative value patterns. Indian pupils manifested a "loosening" of family ties, they showed less dependence on the group and family authority. Compared to their parents, they viewed the school as fulfilling less of an instrumental function.

(3) Although the differences in value-orientations between Indian pupils and their teachers were limited, there were several areas in which Indian pupils clearly differed in outlook from *both* parents *and* teachers. It is significant that Indian pupils indicated less faith in human nature and less self-esteem than did either parents or teachers. However, they showed more confidence in the future and in eventual occupational rewards than either their parents or teachers. It seems reasonable to expect optimism on the part of students regarding job expectations and general future prospects. But the lower degree of self-esteem and reduced faith in human nature seems specific to the Indian child. His experiences in the classroom do not seem to have enhanced his concept of himself, and the parallel experience of failing school grades is equally familiar (Hawthorn, 1967). Such value areas as formal school compliance, instrumental and social orientation toward the school and its goals were found to be no different as between Indian pupils, their parents, and their teachers.

(4) Some significant differences can be identified when the integrated school is considered as a factor in Indian education. The kinds of value differences noted in this study support the hypothesis that integration for

Indian children broadens their concepts of human nature, lessens their dependence on the family, and helps them develop a more realistic concept of the social work-a-day world. These characteristics may be desirable from the standpoint of an assimilationist philosophy of culture; at the same time, they tend to weaken subcultural identity and solidarity.

Implications for Schooling

One of the most important activities a school can engage in is to seek to develop a working relationship with the constituents of the community, particularly parents and pupils. When value differences between such groups are detected and duly noted, effective communication becomes paramount. The challenge for the school will then be to function within a given community in such a way that it supplements the aspirations of the constituents rather than works against them. This implies that the school should become familiar with the values of parents and children so that teachers and curriculum can work more effectively with them. Studies of the kind described here, involving other minority groups as well, need to be developed in greater number and with broader scope if the value-orientations of community constituents are to be discovered and taken into account in school activities.

Efforts by school personnel to accommodate value differences in varying communities have been supported by courses and research programs in universities across North America. These studies have involved Indian, Chinese, Mexican-American and other groups. Intercultural education programs have incorporated such activities as curriculum revisions, teacher-training experiments, and other innovations such as the use of teacher-aides and consultations with special representatives of minority groups. Individual teachers have demonstrated special skills and sensitivity to the question of differences. One teacher in California, for example, divided her class into blue-eyed and brown-eyed pupils and each group was given priority treatment for several weeks. This experiment demonstrated to the pupils the anomaly of suffering discrimination on irrelevant grounds (Kellum, 1970).

Some educators have attempted to revise and adapt current school curricula deleting materials giving slanted or wrong information about minority groups. University centres have focussed attention on minorities through materials based on extended field studies. One of the difficulties encountered by educators is the reluctance of publishers to update materials, rendering obsolete existing books or those they may have in press. The use of minority peoples as advisory personnel on some projects has been a factor balancing the scale of unfair treatment. Native people have found their skills and knowledge in sudden demand by governments and universities or classroom teachers working out a unit on Canada's first people.

One of the recent innovations in intercultural classroom procedures has been the introduction of trained teacher aides who are employed to help educate children of the same cultural background. The role of teacher aides becomes increasingly important because they are able to relate to these pupils with understanding and make them feel at home in unfamiliar

surroundings. If the self-esteem of the child can be assured it may be possible for the child to learn to function in both the society of his minority background and the larger society represented by the school (Esbensen, 1966). Recent experiments have demonstrated the value of qualified personnel in the socialization of the child: they help him to orient himself to the language gaps and the cultural disparities between the two worlds. Bridging activities in some instances have also expanded to include home visits by teachers, special counselling sessions for parents of minority children, and government sponsored programs for drop-out pupils in selected areas of the country (Friesen, 1972). Although the successes and achievements of the various intercultural programs are worthy of note, educators must still be aware of the prejudice and discrimination their pupils face.

A general challenge to Canadian educators pertains to the treatment of minority groups in our schools. The problem is confounded by the fact that, in the case of the Canadian Indian, for example, their spokesmen are not agreed on what the needs of their community are (Cardinal, 1969 and Wuttunee, 1971). Further, rapid change in the technological and axiological aspects of society may bypass some minority groups, without intentionally doing so. Some subcultural groups, not in the mainstream of societal values may go unheeded in their cry for special educational attention. This study has demonstrated that when attention is paid to the question of values in a particular community a special design for schooling is almost inevitable. If these changes are inaugurated and appropriate adjustments are made, the real purpose of education will be realized.

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Alienation and Achievement Among Indian-Metis and Non-Indians in the Mackenzie District of the Northwest Territories

The purpose of this research was to test the assumption that a student's conformity with the achievement value expectations of the school depends on congruence between institutional expectations and individual value orientations. It was assumed that Indian-Métis and non-Indian students differ in value orientations related to achievement behaviour. This assumption was tested empirically by examining alienation from school, and correlating this with achievement. A sample was chosen randomly from Grade IX students attending Territorial Schools in the Northwest Territories. The measuring instruments included Kolesar's Pupil Attitude Questionnaire, the SCAT-Level 3, and the Alberta Departmental Grade IX Examinations. (Dr. Franklyn is Chairman of Applied Social Arts at St. Clair College of Applied Arts and Technology, Windsor, Ontario.)

1. Introduction and Problem

A. Introduction

The prevalence of alienation in modern society has been documented by a number of social theorists. In effect, they have postulated that the rate of the social change in our society leads an alienated way of life. For example, Keniston (1960) has described how increasing rates of social change, affluence, leisure, automation and lack of creativity in work contribute to apathy and withdrawal of youth. In the same vein, Fromm (1955) has stressed the way in which the market place orientation has led man to the feeling that he is driven by forces he cannot control. Other social commentators like Erikson (1963) and Tillich (1963) have emphasized modern man's loneliness and isolation, and have conceived of alienation as a rebellion against the dehumanization of man in the industrial society. Summarizing the impact of alienation in our society, Weiss states:

Modern man has become more and more alienated from his self and his fellow-men, from his nature and his culture, from his work and his leisure, from his

body and sex, from his feelings and his creative potential. This all pervasive alienation has become a main phenomenon of our culture (Weiss, 1961, p. 117).

Generally, the concept of alienation has been used to refer to the estrangement of the individual from his social, political, cultural, ideological or psychological reference points. In most cases, alienation is considered to be a perceptual set encompassing the total life style of the individual. Such a view is compatible with Fromm's definition of alienation.

Alienation as we find it in modern society is almost total; it pervades the relationship of man to his work, to the things he consumes; to the state, to his fellow-men, and to himself (Fromm, 1955, p. 124).

Alienation as used in this study differs from the above approach in that it focuses on alienation that is situationally confined to the school. The major underlying premise is that a person is not alienated from everything. Therefore, the question of "how much" and "from what" is significant to an understanding of whether different degrees of alienation from a focus (school) affect the individual's ability to actualize his potential in respect to the goals prescribed by an institution. In this context, alienation is viewed in relation to its variants in school, rather than as a general all-purpose syndrome.

Furthermore, alienation is treated as an integrating concept comprising relatively independent dimensions. It is operationally defined in the manner suggested by Seeman (1959) except that it is regarded as having a focus or object, in this case the school. These dimensions are defined, as follows:

Powerlessness: Students who exhibit a high degree of powerlessness are those who feel that they cannot determine or control the outcomes or reinforcements they seek within the school situation.

Self-estrangement: Students who manifest a high degree of self-estrangement are those whose participation in school activities hinges on anticipated future rewards as opposed to intrinsic rewards.

Meaninglessness: Students who experience a high degree of meaninglessness have a low expectancy that they could make satisfactory predictions about the future outcomes of their behaviour in a school situation.

Normlessness: Students who manifest a high degree of normlessness expect that they must use illegitimate means to achieve the goals set by the school system.

Isolation: Students who exhibit a high degree of isolation tend to assign a low value to the goals or beliefs stressed by the school authorities (Anderson, 1970).

Alienation, then, is viewed as a feeling of estrangement from school, coupled with a feeling of self-estrangement. This view accepts Byles' (1969, p. 9) theory that alienation from school is a function of affiliation, identification, and achievement.

Specifically, alienation is considered to be a measure of the extent to which the student is affiliated with, identifies with, and experiences a degree of success and satisfaction in school. The underlying rationale is based on the concept that the school is a social institution designed to

acculturate and socialize the youth of a given society. As a consequence, it reflects the collective social values and norms. It follows that identification with, and acceptance of, these values provide evidence of integration; on the other hand, rejection of these values is indicative of alienation.

The problem examined in this paper stems directly from assumptions proposed by Bryde (1965) and Parsons (1954). On the one hand, Bryde suggests that the Sioux Indian culture, which once provided norms and values for its society, is anomic for all intents and purposes: as a consequence, the majority of these people reveal patterns which can be identified as alienation and its components. The position taken here is that the Indian is caught between two cultures: he is literally outside of, and between both. The psychological state which results from his efforts to adapt to these circumstances can be defined as alienation. The resultant effect is a general psycho-social condition out of which develop the high rates of crime, delinquency, school dropouts, and low and reducing educational achievement among Indians in the U.S.

In this regard, Spindler and Goldschmidt state:

... persons in the transitional category, alienated as they are from the cultural symbols of their ethnic past and at the same time not having internalized the symbols which constitute the value system of western society, will exhibit more symptoms ... of personality disorganization than members of groups closely identified with the symbols of these cultural types (Spindler & Goldschmidt, 1952, p. 80).

Hawthorn's recent study adds another perspective to the societal and value disparities which occur in a cross-cultural environment. The report suggests that:

the differences of both environmental and psychological factors between Indian and white students produce not only alienation from the dominant cultural norm, but also alienation from the Indian culture (Hawthorn, 1967, p. 110).

The report goes on to hypothesize that the high rates of failure, dropout, and unemployment, as well as obvious difficulties of interpersonal adjustment, attest to the low effectiveness of the school in preparing students for life in the larger society.

Other Canadian research workers have expressed serious concern for the increasing rise in delinquency among unemployed school leavers—Eskimos (Ferguson, 1961; Clairmont, 1963), Indians (Zenter, 1963), and Métis (Slobodin, 1966). These authors contend that these adolescents have become disillusioned with their traditional past, and aspire to participate in the dominant society. However, they fail to make the necessary adjustment because their experiences have not reinforced the kind of internal controls or value orientations that are stressed in Canadian society.

On the other hand, Parsons and Shils' (1954, p. 56) theory provides a framework for the study of socialization as an important aspect in the life of a student. The theory proposes that to the extent that socializing agents institutionalize value expectations that complement each other, they reinforce, extend, or supplement the influence of each other. On the other hand, to the extent that they differ, they generate value conflicts in the student which affect his ability to actualize his potential in an educational setting.

Essentially, Parsons and Shils' action theory, as well as other organizational and value conflict theories, implies that conformity with the institutionalized value expectations depends on the nature and scope of the socialization process. Some important aspects of this process are: the degree to which there is mutual acceptance between the socializing agent (the school) and the student; the sanctions applied by the socializing agent in relation to the student's conformity or non-conformity with their expectations; finally, the extent to which these institutionalized expectations are internalized by the student.

The rationale for considering academic achievement as an indicator of alienation from school lies in the consequences that academic achievement has on the individual's freedom to choose, and to exercise some control over, his life experiences. It is evident that, in our modern technological society, access to socially valued and personally satisfying goals is coming to depend more and more on the level of academic and vocational training. In fact, access to valued status, other than by way of formal education and training, has become almost impossible. Although academic achievement is not the only indicator of adaptation to the school, Friedenberg (1959) and Goodman (1956) have justified under-achievement as an index of adolescent alienation from both school and society.

One of the most significant pieces of research on the relationship between attitudes to school and academic achievement is the Coleman report. It found that whatever measure was chosen to investigate the achievement of the disadvantaged child, attitudinal variables (self-concept, success in school, sense of control of the environment) had the strongest relationship to achievement. The report concludes:

A pupil attitude factor which appears to have a stronger relationship to achievement than do all school factors together is the extent to which the individual feels that he has some control over his destiny (Coleman, 1966).

Attitudes reflect a basic outlook on life. They affect the way in which people adjust to, or cope with, their social environment. It is surmised that positive attitudes towards institutions reflect the extent to which the individual has become socialized, that is, the degree to which he has incorporated the basic values of the society. In respect to the school, it can be assumed that the more the student adjusts to the institution, the greater is his opportunity to internalize the meanings and values which constitute the goals of the institution, and the values inherent in his society.

It seems logical to conclude that attitudinal responses to the school can be used as a measure of a student's satisfaction or dissatisfaction with the school, and provide an indicator of both his level of social maturity and academic achievement. In fact, the problem of adjusting to the school may be the essential factor which underlies lower academic achievement. For the Indian-Métis student, under-achievement may be indicative of his problem of adjustment to school, to teachers, and to peer group. In this respect, Etzioni's analysis of organizational dilemmas may apply to schools.

Many people who work for organizations are deeply frustrated and alienated from their work . . . Satisfied workers usually work harder and better than

frustrated ones . . . organizational rationality and human happiness go hand in hand . . . The problem of modern organizations is thus how to construct the human groupings that are as rational as possible, and at the same time produce a minimum of undesirable side effects and a maximum of satisfaction (Etzioni, 1964, p. 2).

B. Statement of Problem

The purpose of the study is to test Parsons and Bryde's theories of alienation. In general terms, the study investigates whether attitudinal variables and ethnic status combine to produce an effect on school performance. Specifically, the study was designed to probe the following questions:

- (i) Do Grade IX students in the Mackenzie District of the Northwest Territories, regardless of sex or ethnic status, possess the same alienative attitudes toward school?
- (ii) Do Indian-Métis and non-Indian Grade IX students, manifesting varying degrees of alienation from school, achieve differently when academic aptitude is controlled?

2. Related Studies

Studies fall into four categories: alienation and socio-economic status, alienation within the organizational structure, alienation and achievement in general, and alienation and achievement amongst American Indians.

Dean (1961), Bell & Meier (1959), Middleton (1963), and Keniston (1960) using different samples, and a variety of alienation variables all report evidence of a negative correlation between measures of alienation and socio-cultural factors.

The justification for including socio-economic studies in this review lies in the fact that there is a parallel between lower socio-economic groups and minority ethnic groups. Merton (1957, pp. 131-194) contends that, although incentives for success pervade all levels of the class structure, those at lower socio-economic levels must turn to illegitimate means for reaching these goals. In the context of this study, the illegitimate means are reflected in alienative attitudinal or behavioural responses. Rosen (1959) suggests that, although social class is significantly and directly related to vocational aspirations, ethnicity accounts for more variance in this matter than does social class.

Results from organizational studies (Pearlin, 1962; Clark, 1959; Neal & Seeman, 1964; Neal & Rettig, 1963) suggest that the dysfunctional nature of some organizations is reflected in the alienation of its clients. This is due to the role and value conflicts caused by institutional expectations. Specifically, Zurcher et al. (1965) using Mexican and Anglo-American samples, reported that an individual in a cross-cultural environment when placed in a situation in which he has to choose between particularism (duty to a friend) and universalism (duty to an abstract society) his behaviour reflects the pattern of his parent culture. On the other hand, Kolesar found in a sample of students from twenty public schools, that pupil powerlessness and total alienation were significantly greater in highly bureaucratic schools.

Studies (Seeman, 1967, p. 270; Seeman, 1967; Epperson, 1963; Battle & Rotter, 1963) which focus on the relation between alienation and achievement tend to establish a negative relationship between them. Seeman, using a variety of alienation variables, institutions, and learning materials established a relationship between powerlessness and low acquisition of knowledge. His general conclusion was that, regardless of the nature of the institution, an individual's sense of personal control is important to the learning process.

It is to be noted that, of these studies, only Patsula (1968) reported a lack of significant relationship between alienation and academic achievement.

Studies of Indian education in the U.S. by Kerchoff (1959), Tefft (1967), Bryde & Spilka (1964), Bryde (1964), all report a negative relationship between alienation and educational achievement. They provide a theoretical rationale, suggesting that individual and group behaviour is dependent on values, and that the most significant values are those that underlie the culture of which one is a product. They have concluded that, because of cultural stress, certain elements emerge which give rise to alienated behaviour, and this personality disorganization is manifested by a decline in educational achievement, among other things.

The present work is closely related to two of the studies reviewed. Kolesar's thesis provides the insight that the nature of the institution may have alienative effects, and that these may be reflected in attitudes. Secondly, this study can be considered a replication of Bryde's work in that it seeks to establish the interaction between levels of alienation in a cross-cultural context, and resulting educational achievement.

3. Methodology and Design

The population used for this study included all Grade IX students in the Mackenzie District of the Northwest Territories. From these, a random sample of 108 students (54 Indian-Métis, 54 non-Indian) was selected. The measuring instruments were: Kolesar's *Alienation Questionnaire*, the *Grade IX Alberta Battery of Junior High School Achievement Tests*, and *SCAT-Level 3 Aptitude Test*. The test-retest reliabilities of Kolesar's *Alienation Scale* were: Powerlessness .81, Isolation .60, Self-strangement .91, Meaninglessness .75, Normlessness .89, and Total alienation .89. Data were analyzed by means of t-tests, as well as by analysis of variance and co-variance techniques.

4. Results and Discussion

The main hypotheses associated with the problem were tested; these are stated in the null form with their related findings.

(1) *There are no significant differences in alienation scores between Indian-Metis and non-Indian students*

The results showed no significant differences on alienation from school between Indian-Métis and non-Indian students. However, there was a significant difference on the Normlessness variable. This finding indicates that the Indian-Métis students, more than their non-Indian counterparts,

believe that socially unapproved behaviours (making false statements to teachers and educational authorities; using illegitimate means to acquire acceptable grades) are justifiable to achieve the important goals and values stressed in the school setting.

The relevance of this finding is the apparent incongruency of attitudinal expression toward the school by the Indian-Métis student. On the one hand, he expresses similar attitudes as do non-Indians towards the school (i) in respect of his ability to determine the nature of the reinforcements he seeks (powerlessness); (ii) his belief that participation in school activities can provide him with anticipated future rewards (self-estrangement) as opposed to intrinsic benefits; (iii) the belief that he could make satisfactory predictions about the outcomes of his interactions with the school (meaninglessness); (iv) and his tendency to assign the same reward value to the goals that are highly valued in the school (isolation). On the other hand, he responds differently to the mode of pursuing the goals stressed in the school.

Etzioni's (1964, pp. 58-67) analysis of organizational control within an institution may well be relevant as an explanation of the results. Generally, the school functions as an organization in which control emanates from social and legal power. According to Etzioni, control within the organization is defined in terms of the base of power from which it evolves. The power derived from physical means is defined as coercive; power based on material means is utilitarian; power derived from the symbols of prestige, esteem, or love is normative, or social power. At the same time, he says:

All other things being equal, at least in most cultures, the use of coercive power is more alienating to those subject to it than is the use of utilitarian power, and the use of utilitarian power is more alienating than the use of normative power (Etzioni, 1964, p. 60).

In explaining coercive control, Etzioni defines physical as exerting a definite effect on the body. This suggests that coercive control can be interpreted to include any sanctions that create tension, dissatisfaction, or a sense of failure within an individual. In a school situation, the main form of coercive control is the emphasis on academic achievement.

Using this theoretical framework, it seems that the similar alienative attitudes to school (powerlessness, meaninglessness, isolation, self-estrangement and total alienation) between the Indian-Métis and non-Indian student are related to the kind of power base that exists within the school structure. Etzioni maintains that:

Normative power is predominant in religious organizations, ideological-political organizations, colleges and universities, voluntary associations, schools and therapeutic mental hospitals (Etzioni, 1964, p. 60).

Although in many social institutions the above may be true, this may not apply to the Indian-Métis student. For him, normative power may not function despite the fact that he expresses attitudes similar to the non-Indian students toward individual and institutional expectations within the school. It could be that the school, with its focus on learning tasks and deferred gratifications, is not meaningful to the Indian-Métis student. In fact, if he sees the goals of the school as unimportant, and if sanctions

are imposed for not achieving these goals, then utilizing socially unacceptable behaviour patterns to meet the objectives of the school may appear justifiable. It can then be implied that such students have been conditioned to accept the objectives of the school either by coercive, or utilitarian power.

Etzioni suggests that coercive power, by its very nature, may force provisional compliance, while at the same time it alienates the individual from the core of the school program. Maybe this is the situation of the Indian-Métis student. The questions that should be asked in respect to the organizational structure of schools are: What is the philosophy of control? To whom is prestige and esteem directed? What role do love and acceptance play?

Another possible explanation of the results may be interpreted in the light of Gue's comment that:

Indian parents are more successful in enculturating their children in Indian ways than are the schools in enculturating the same children towards the dominant society; and (2) Indian pupils may be trying out white values around the age of fourteen, then rejecting them (Gue, 1967, p. 266).

It could be that the Indian-Métis student, faced with this dilemma or conflict of interest, may come to the conclusion that, to succeed within the organizational structure of the school, he has to detach himself from his cultural and family beliefs and adopt the values of the dominant society. This lack of a strong mutually reinforcing relationship between school and the Indian-Métis parents may result in insecurity, confusion, or a feeling of powerlessness. Thus, feeling powerless in the face of competition in the school situation, the Indian-Métis student may rely on socially unapproved means to measure up to the expectations held for him by the school.

Essentially, the Indian-Métis life and culture have been uprooted from a communal setting and are now required to serve a new set of institutional norms. Maybe some of the values of these institutions are rejected because they represent the subjection of cultural values to the requirements of the institution.

(2) There are no significant sex differences on alienation scores.

The results of the analyses demonstrated that there was no sex difference on scores on all five alienation variables. The mean scores indicate the tendency for boys to score higher than girls regardless of ethnic status, but the differences were not statistically significant. This result agrees with Patsula's (1968) findings. However, it is inconsistent with the findings of Meier and Bell (1959), Mizruchi (1964), and Bryde who have all reported higher scores for girls on some alienative measures.

(3) There are no significant interaction effects between sex and ethnicity in alienation scores.

The analyses result in rejection of the hypothesis except in the case of powerlessness. In comparing boys with girls, the Indian-Métis girls exhibited a greater feeling of powerlessness than the non-Indian girls; conversely

the non-Indian boys exhibited a greater feeling of powerlessness than the Indian-Métis boys.

A plausible explanation for this finding may lie in the fact that, for the Indian-Métis female, adjustment to the competition with the male in the school situation results in a continual conflict between institutional and cultural expectations. This point is reinforced by Bryde who suggests that:

Indian females, thrust into competition with Indian males in the white environment of a modern school, could well feel disturbed by the school pressure to perform and excel over boys, when the culture recommends conformity to an inferior role (Bryde, 1965, p. 121).

(4) *There are no significant differences on achievement scores between Indian-Métis and non-Indian students.*

This hypothesis was partially rejected. Despite the attempt to control academic aptitude Indian-Métis students differed significantly from non-Indian students in Language, Science and Aggregate achievement. The apparent lowered achievement by the Indian-Métis students may be symptomatic of problems of adjustment to the academic orientation to the school.

Perhaps the achievement differences are really language or reading difficulties, rather than mental defect, or lowered achievement. In fact, it is surmised that the main area of deficiency in the Indian-Métis sample is that of vocabulary and information, both of which are largely dependent on the experiential background of the student. This study accepts MacArthur's (1968) assumption that the level of intellectual functioning is a product of heredity and environment.

In addition, "a developmental theory" of intelligence and achievement assumes that certain stages in the developmental processes are crucial to the learning process. What is implied is that in the social, emotional and educational development of a child, certain processes must occur in a certain sequence. If they do not, or fail to develop in line with the normative population, then their potential to function at maximum capacity is jeopardized. The work of Piaget (1950) and Bruner (1965) seems to lend support to the critical period hypothesis in the development of intelligence and achievement patterns.

This theoretical framework can be used to explain the lower achievement of the Indian-Métis students. The basic assumption is that language is the key to the educative process. The Indian-Métis student, because of his culture, social and economic orientation, fails to develop the kind of perceptual-motor background skills which are critical to the development of basic academic skills, and more so reading and language skills to which he is exposed in the school situation.

Central to this relative deficiency in perceptual-motor development in the Indian-Métis may be the lack of exposure to work and play objects concomitant with those of the normative population. The significance and importance of a possible vacuum in the development of facilities essential to the formal educational process is illustrated thus:

The non-Indian child who has blocks to play with learns to discriminate spatially, and to distinguish colours and sizes . . . Tactile sensory discrimina-

tion is also learned through familiarity with a number of toys and direct teaching of the parents . . . such skills help immeasurably when the child learns to read and write. And such skills are assured by the school as being possessed by all children on entry (Hawthorn, 1967, p. 114).

As suggested by the Hawthorn Report, the school may perpetuate this lack of perceptual-motor development by continuing educational programs at the primary level assuming that all children have the same perceptual-motor and language experiences in the home. The consequences of such an assumption is the elimination of valuable pre-school experiences in favour of a more academic type of experience beginning in grade one.

(5) *There are no significant differences on aggregate achievement between Indian-Métis and non-Indian students with varying degrees of alienation.*

The results did not reveal many significant alienation-aggregate achievement differences between Indian-Métis and non-Indian students. The pre-experimental reasoning was that if a negative relationship exists between alienation and achievement, the level of alienation would affect the achievement of both groups in the same way. The hypothesis was partially tenable because the only significant achievement differences between the groups were found between the Indian-Métis and non-Indian students with Low Composite Alienation scores, Low Normlessness scores, Low Meaningless scores, and Average Powerlessness scores. In all cases, the tendency was for the non-Indian student to achieve higher than the Indian-Métis student.

One significant finding is the conclusion that acculturation alone is not sufficient to ensure comparable achievement between the two groups. In spite of the fact that Indian-Métis and non-Indian students indicated similar low alienative attitudes toward the school, the non-Indian students achieved higher. One might easily conjecture that the slight evidence in this study for non-Indian students with low and average degrees of alienation to achieve better than Indian-Métis students is related to Merton's (1963, pp. 363-401) idea that anomie (normlessness) occurs when there is conflict between culturally prescribed goals and socially organized access to them by legitimate means. This may be true of the Indian-Métis. Although he may have assimilated some aspects of the institutional expectation goals, he may not have equally internalized the institutional norms governing the ways and means for attainment (achievement).

In the past, it has been assumed that low achievement of Indian-Métis compared to non-Indian students was due to lack of technical skills, motivation, or intelligence. Consequently, the majority of educational programs have emphasized acculturation, and the removal of language problems as a prerequisite for increased achievement. It is suggested that inflexible curricula and psychological unreadiness are the chief factors causing lowered educational achievement by the Indian-Métis in comparison to non-Indian students.

5. Implications for Theory and Practice

The primary contribution of this study is the finding that while the Indian-Métis and non-Indian expressed similar alienative attitudes toward the school, they differed on the dimension of Normlessness.

There may be problems of adjustment to school based on the need to adjust to two cultures, each with its respective demands on the individual. The Indian-Métis, unlike the non-Indian student, is in a marginal position. His life style embodies two fundamental socializing agents which have conflicting sanctions or behaviour codes. Because he spends a large proportion of his life at school, in most cases away from home, his behaviour becomes attuned to the sanctions of success which prevail in the school situation. Education is more than what happens in school. The language, systems of beliefs, and history are all fundamental influences in the education of a child. This point is reiterated by the Coleman Report.

One implication stands out above all: that schools bring little influence to bear on a child's achievement that is independent of his background and general social context (Coleman, 1966, p. 325).

The importance of the home as a socializing agent for success in the elementary school is emphasized by Erickson.

The child's danger at this stage lies in a sense of inadequacy and inferiority. If he despairs of his tools and skills or his status among his tool partners, his ego boundaries suffer, and he abandons hope for the ability to identify early with others who apply themselves to the same general section of tool world. Many a child's development is disrupted when the family may not have prepared him for school life, or when school life may fail to sustain the promises of the earlier stages (Erikson, 1950, p. 227).

The question is: What can the school do to help these students overcome these deficiencies? In the first place, a definitely structured pre-school kindergarten program should be established within each community. The experiences gained from these institutions will facilitate perceptual-motor development, and thus provide pupils with the necessary reading and writing skills to build on when they move to grade one. Once the child is in grade one, this program should continue. Again, a school community guidance counsellor should set up a program designed to educate parents about the perceptual-motor needs of children, emphasizing the kinds of materials relative to each age level.

Because of the difficulties the Indian-Métis student may have in abstracting concepts from the normative population, the reading and writing curriculum should be geared to the experiential content of his community, especially in the early grades. To reinforce this process, the option should be given to the student to communicate in his own language, English should be taught as a second language. It is in this area that the native Indian teacher aide could be very functional. Her presence will not only raise the level of self-esteem of the Indian-Métis student, but communicating orally in his own language will increase his confidence about his ability to communicate, thus facilitating his learning of English. By and large, programs have been designed to be remedial in nature. As a consequence, they have focused on relieving the symptom rather than dealing with the cause.

Curriculum planning within the school should take cognizance of this problem. This would require the establishment of a flexible non-graded system to accommodate for individual differences. This would act to reduce the emphasis on competitive educational achievement.

Of course, this does not mean that the school has to lower its standards in trying to bridge the gap between itself and the community. It does, however, have the responsibility to translate these standards into programs and materials which are meaningful to the Indian-Métis child. Programs and curricula should not be oriented to eliminate cultural beliefs, values, experiences or customs, but should build on the positive elements of the child's background and experiences, rather than being directed solely toward remedial action to overcome cognitive deficiencies.

This investigation has not exhausted the possibilities for research into alienation from school. Replication of the study at other grade levels could provide much useful information. It would also be of interest and value to repeat the study including an Eskimo sample, and also a purely Indian sample based on the official definition of an Indian. Another possible area of research would be to compare the public school students with those attending territorial schools.

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Alienation and Achievement among Indian-Métis

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Reference Groups and Significant Others of Student Teachers

The purpose of the study was to identify individuals and groups who were significant others and reference groups of student teachers. Data were obtained from questionnaires completed by 172 student teachers in Education Practicum 301 in May, 1973. Findings showed that the cooperating teacher had a prominent role in teacher education—one that provided assistance in lesson planning and that influenced the teaching style of the student teacher more than any other person. These findings seemed to apply for all teaching majors. The cooperating teacher was a model and significant other of the student teacher. (Miss Pierce is Associate Professor in the Department of Educational Foundations, Faculty of Education, The University of Alberta.)

Much has been written about groups, social relations, and social influences in the schools and in education generally. Reference groups, those groups whose standards are taken to judge oneself, seem to be a concern both of students and professors of education. The significant other, an individual who influences one's beliefs about himself, has been the subject of research (Brookover, 1969, Ch. 4, 65-66, 70-80). There appears to be evidence to conclude that expectations of significant others and reference groups influence school achievement of pupils, that parents usually are significant others of elementary and secondary school pupils, and that teachers frequently are significant others to students.

Goslin and Parker studied significant others and reference groups of teachers. Goslin (1965, 36) referred to occupants of various roles as significant others. He included students, administrators, other teachers, and parents of pupils—persons with whom the teacher interacts while at work—among those that affected the teacher's behavior. In addition, he saw the teacher's spouse, children, parents, and former teachers as persons who were members of his reference group. J. H. Parker (1970, 276-9) seemed to give some support to Goslin when he said, ". . . it appears that the individual school and the teachers therein comprise the reference group for the teacher".

Some researchers investigated the influence of cooperating teachers on student teachers. Seperson and Joyce (1971) found that while there seemed to be no relationship between indices of cooperating teachers and student teachers before contact, there were relationships in several indices after student teaching began. Moreover, this relationship appeared to continue but with no consistent patterns of influence. Mitchell (1969), when studying the effect of the cooperating teacher on the verbal classroom interaction of secondary English student teachers, concluded that the influence was sufficient to warrant careful selection of and orientation for cooperating teachers. Flint (1966) found that there was a strong relationship between student teachers and cooperating teachers in questioning behavior and some relationship in sanctioning behavior.

The social power of significant others and modes of social learning have been studied. French and Raven (1959, 150-167) identified types of social power of significant others over teachers. First, they said the subject models his behavior upon that of a person, a referent, whom he likes or respects. Second, superior knowledge and/or skill of another, an expert, is acknowledged. Third, the subject admits that certain behavior legitimately can be expected of him. Fourth, the subject recognizes that another person is able to apply negative or positive sanctions for his behavior. Broom (1973, 98) included operant conditioning, identity-taking, problem solving, and modelling-after in modes of social learning. In "modelling-after," the one of the above four upon which this study focussed most, the individual gets his standard of excellence from his model.

Riesman (1950) indicated that the real teacher in an "other-directed" society is the peer group. Some efforts have been made to organize schools to enable pupils to learn from their peers.

But questions remain about student teachers. Do student teachers learn from their peers? Are the peers the real teachers of student teachers? Who are the persons who are significant others and/or members of the reference groups of student teachers? Who are their models? The purpose of this study was to identify those individuals or groups who were the significant others and reference group members of student teachers.

Four questions were the focus of the research.

1. How did student teachers rank cooperating teachers, faculty consultants, and faculty of education professors for provision of assistance in lesson planning?

2. How did student teachers with different teaching majors rank cooperating teachers, faculty consultants, and faculty of education professors for provision of assistance in lesson planning?

3. Who and/or what were reported by student teachers as influences on their teaching?

4. Who and/or what were reported by student teachers with different teaching majors as influences on their teaching?

Method

There were 215 student teachers registered in Education Practicum 301 at The University of Alberta who completed their final week of teaching

in Edmonton elementary schools from April 30 to May 4, 1973 (Students registered in Ed. Pr. 301 were in elementary school classrooms for a minimum of three half-days per week in either the fall or winter session and for five full consecutive days following the completion of final examinations in April.). These students comprised the non-probability sample for the study. Bundles of sealed envelopes, addressed to the student teachers and each containing a questionnaire and self-addressed envelope for the return of the questionnaire, were sent to principals of the schools where student teachers were located. An accompanying letter to the principal asked for cooperation in the distribution of the envelopes to the student teachers. With the exception of a few returned by mail, completed questionnaires were collected by the researcher on May 7 and 8, 1973. A total of 172 (80 per cent) completed questionnaires provided the data for the study.

Results

How did student teachers rank cooperating teachers, faculty consultants, and faculty of education professors for provision of assistance in lesson planning?

Student teachers were asked to check on a three-point Likert-type scale, to which weights of one, two, and three were assigned, the appropriate degree of assistance they felt they received from cooperating teachers, faculty consultants, and faculty of education professors in their lesson planning. Data are summarized in Table 1. From means, it appears that student teachers ranked cooperating teachers (1.320), faculty consultants (2.203), and faculty of education professors (2.378) in descending order for degree of assistance in lesson planning. Not only did the cooperating teachers rank first, they also received a considerably higher mean score which seems to imply that student teachers placed much higher emphasis on this one of the three sources of assistance in lesson planning. In addition, standard deviations suggest that the extent of agreement among students was highest for cooperating teachers and lowest for faculty consultants, that some student teachers considerably more than others saw their faculty consultants as sources of help.

TABLE 1
DEGREE OF ASSISTANCE STUDENT TEACHERS FELT THEY RECEIVED IN LESSON PLANNING

Source of Assistance	N	Mean Scores (3 point scale)	Standard Deviation
Cooperating Teachers	172	1.320	0.547
Faculty Consultants	172	2.203	0.799
Faculty of Education Professors	171	2.378	0.667

A low mean score indicates high placement in giving assistance.

How did student teachers with different teaching majors rank cooperating teachers, faculty consultants, and faculty of education professors for provision of assistance in lesson planning?

When responses were examined by teaching majors, some variations from the results for the total sample were observed. While means for each major ranked cooperating teachers first, faculty of education professors placed second in art, French, and music and 2.5 in physical education rather than third as they ranked for other teaching majors. Professors in these disciplines were reported to be of greater assistance to student teachers than their faculty consultants.

Standard deviations in teaching majors show additional variation. Agreement among respondents was greatest for cooperating teachers except for science and social studies teachers where agreement was greatest for contribution of faculty of education professors to lesson planning with cooperating teachers second. In other words, these faculty of education professors were seen to give the least assistance to the student teachers in lesson planning and the students tended to agree with each other in this evaluation.

Spearman's rank order correlation was used to compare the rank by teaching major in lesson planning assistance of cooperating teachers and faculty consultants, and cooperating teachers and faculty of education professors (Table 2). For the first comparison, rho was -0.691 and for the second, rho was -0.091. Thus, the three sources of assistance in lesson planning were ranked very differently when teaching majors were considered. It was concluded, then, that student teachers were receiving assistance in lesson planning although the degree of assistance and source of assistance seemed to vary with teaching majors.

TABLE 2

RANKING OF COOPERATING TEACHERS, FACULTY CONSULTANTS AND FACULTY OF EDUCATION PROFESSORS FOR ASSISTANCE IN LESSON PLANNING
ACCORDING TO STUDENT TEACHERS' TEACHING MAJORS

Teaching Majors	N	Cooperating Teacher	Faculty Consultant	Faculty of Education Professor
Music	5	1	10	9
French	8	2	11	1
Special education	27	3	6	4
Art	8	4	9	6
Early childhood education	49	5	7	10
English reading	51	6	3	11
English Language	23	7	1	7
Physical education	16	8	5	2
Science	12	9	8	5
Social studies	33	10	4	8
Mathematics	9	11	2	3

Correlation between cooperating teachers and consultants: rho = -0.691
Correlation between cooperating teachers and education professors: rho = -0.091

Who and/or what were defined by student teachers as influences on their teaching?

Students were asked to check for fifteen probable sources the degree of influence they felt each had on their teaching according to great influence, moderate influence, little influence, and no influence. In analysis, influences were weighted from one to four with one representing the greatest effect.

The degrees of influence are summarized in Table 3. From mean scores, it appears that cooperating teachers (1.55), education courses (2.15), textbooks in education courses (2.27), and professors in curriculum and instruction courses (2.34) in descending order were judged the four greatest influences from the fifteen probable ones listed in the questionnaire. Faculty consultants and other faculty of education professors ranked sixth and eighth respectively. Relatives, other than parents, were placed at the bottom of the list of influences. Former teachers were judged more influential than faculty consultants and fellow students more influential than other faculty of education professors. Courses and textbooks were ranked as greater influences than persons except for cooperating teachers.

TABLE 3
INFLUENCES ON TEACHING AS REPORTED BY STUDENT TEACHERS

Influence	N	Rank	Mean Scores (4 point scale)	Standard Deviation
Cooperating teacher	172	1	1.55	0.734
Education courses	171	2	2.15	0.726
Textbooks in education courses	172	3	2.27	0.754
Professors in curriculum and instruction courses	172	4	2.34	0.845
Former teachers	169	5	2.52	0.758
Faculty consultant	172	6	2.55	0.948
Fellow students	171	7	2.62	0.897
Other faculty of education professors	172	8	2.87	0.931
Textbooks in other courses	171	9	2.98	0.842
Parents	171	10	2.99	0.898
Other teachers in the school	172	11	3.06	0.887
Professors from other faculties	172	12	3.30	0.829
Spouse	111	13	3.32	1.022
Others	86	14	3.33	1.094
Other relatives	128	15	3.41	0.906

A low mean score indicates high influence.

Further, the means for the fifteen influences on student teachers show the degree of effect for each variable. While means had a possible range from 1 to 4, four of the variables only had means of 2.5 or less (2.5 is the mean of the range of 1 to 4). Also, the mean for cooperating teachers was 1.55 while for faculty consultants it was 2.55 and for other faculty of education professors 2.87. Again, the cooperating teacher appears to be a prominent influence—a significant other—for student teachers.

Standard deviations indicate that student-teacher agreement for the

ranking of the first three influences was higher than for other influences. This appears to be further evidence that cooperating teachers, education courses, and textbooks in education courses were leading influences on student teachers in their role performance in the classroom.

Who and/or what were defined by student teachers with different teaching majors as influences on their teaching?

To answer question 4, the sample means for each of the fifteen probable influences on teaching of student teachers were ranked (Table 3). Also, means for each of the fifteen variables were determined for each of the teaching majors. Table 4 shows the Spearman rank order correlation of means for each teaching major with means for the total sample. While there was some variation in the degree of influence on the teaching of student teachers as reported by the students for the fifteen variables examined for each teaching major, the difference was slight since correlations were high. Music, with five student teachers only in the sample, showed the greatest degree of deviation from the total sample (It was possible for the size of the sample for each teaching major to influence the correlation since the sample for each major was included in the total sample.). Regardless of the teaching major, then, it appears that the ranking of influences on teaching as shown in Table 3 remained approximately the same.

TABLE 4
CORRELATIONS OF MEANS OF TEACHING MAJORS AND MEANS OF TOTAL SAMPLE

Teaching Majors	N	rho	Rank
English language	23	0.9777	1.5
Social studies	33	0.9777	1.5
Physical education	16	0.9768	3
English reading	51	0.9642	4
Special education	27	0.9357	5
French	8	0.9179	6
Early childhood education	49	0.9107	7
Science	12	0.9054	8
Mathematics	9	0.8616	9
Art	8	0.8134	10
Music	5	0.6616	11

Conclusions

To summarize, it appears that the cooperating teachers had a prominent role for provision of assistance in lesson planning and for influence on the teaching behavior of student teachers. This finding held for all teaching majors. In addition, the degree of influence of the cooperating teachers seemed to be much greater than that of faculty consultants and other education professors.

Results of this study appear to lend some support to the findings of other researchers. As in Seperson & Joyce's, Mitchell's and Flint's studies, the cooperating teachers were found to be important persons in the preparation of teachers—they were significant others. It seems probable that the effect cooperating teachers had on student teachers can be ex-

plained, at least in part, (1) by French and Raven's research—that the student teacher liked the cooperating teacher, that he acknowledged the cooperating teacher as an expert, and that he realized the cooperating teacher had the power to apply sanctions (cooperating teachers were expected to submit a grade on the student teacher's performance), (2) by Broom—that the cooperating teacher was a model who provided a standard of excellence for the student teacher, and (3) by Riesman—that the real teacher was the peer group and here the student teacher identified with the cooperating teacher as a peer.

While faculty consultants ranked second out of three groups for assistance in lesson planning, they ranked sixth out of fifteen influences in teaching. Yet, faculty consultants, in practice, were expected to have considerable contact with student teachers and, like cooperating teachers, were responsible for evaluating the students' work.

Certain conclusions seem to follow. The faculty of education, The University of Alberta, charged with the responsibility of educating teachers, had fairly direct supervision of education courses, textbooks in education courses, professors in curriculum and instruction courses, and faculty consultants—four leading influences on student teachers according to findings of this research. However, the faculty's involvement in the choice and preparation of cooperating teachers—the most influential persons on student teachers as identified in this study—seemed circuitous and weak (School principals generally assigned student teachers with staff members who wished to work with them, and the faculty had no direct part in the preparation of these persons for their tasks related to the student teaching experience.). Like Mitchell's research (1969), the study seems to support careful selection of and orientation for cooperating teachers. In addition, since the minimum of two visits per teaching round by the faculty consultant, in practice, could become the maximum number of visits (Student Teaching Handbook 1972-73, 13-14), the opportunity for interaction with the student teacher and for the faculty consultant to be a significant other of the student teacher was limited and could partially explain the low degree of effect he was reported to have on the student teacher's performance. Also, faculty of education professors were reported to have greater influence than faculty consultants in art, music, and French where teaching major enrolments were low—five or eight students. This seems to suggest that, in small groups, faculty of education professors were significant others—they may have been faculty consultants of the student teachers—or, that the nature of the discipline explained partially the influence of art, music, and French professors.

Further research appears desirable. This study used, as a sample, student teachers from the elementary route and from one plan only for student teachers at The University of Alberta. Additional research with samples from secondary education student teachers and from other plans for the student teaching experience would contribute further to what is known about significant others and reference groups of student teachers. Experimental studies where the experimental group of student teachers had cooperating teachers with special preparation for their task and where faculty consultants spent more than the minimum amount of time with

student teachers would help to explain these two roles as significant others of student teachers. Finally, do significant others of student teachers continue to be significant others after the students' graduation seems to be a question worthy of investigation.

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A Comparison of Listening Comprehension Levels in Literary Narrative, Science and Social Studies Materials at the Sixth Grade

The purpose of this study was to ascertain whether the type of material was a significant factor in determining listening comprehension. To do so the investigator constructed a listening test based on a silent reading test for content materials of science, social studies and literature. The sample of ninety subjects was randomly selected from the total enrolment of grade six students in one suburban Calgary school. Results indicated that science materials were more readily comprehended than either social studies or literature. Within the limits of the study, it appears that educators need to be aware of the material type factor when planning oral instruction. There is a need for more research into the influence of this factor. (R. W. McLeod is a Reading Consultant with the Fort Frances-Rainy River Board of Education.)

With the trend towards greater emphasis on language as a tool for communication, increased interest has been shown in the receptive process of listening as an important aspect of the language arts curriculum. This increased interest in listening is reflected in a comparison of the 1960 and 1969 editions of the *Encyclopedia of Educational Research*. Margaret J. Early (1960) devoted less than a page to listening as a sub-heading in her review of communication skills, but Sam Duker (1969) gave a full six page review to listening. The listening investigations of the past two decades have looked primarily at such variables as academic achievement, intelligence, sex, chronological age, and rate of presentation of listening materials.

A survey of the available listening research revealed that the variable of type of material had received little attention. In one of the early listening studies, Beighly (1952) concluded that the concreteness and abstractness of ideas presented was a significant factor in determining comprehension. A later study (Dolcini, 1964) compared children's listening comprehension based on fictional and factual materials. A study by Ernest

(1968) with university students indicated that the type of material was an important variable in determining listening comprehension. When the question of male or female superiority in listening comprehension was considered, the research literature provided no clearly definitive answer. Studies have been carried out that found male superiority (Hampleman, 1958; King, 1959; Brimer, 1969), while other studies have indicated female superiority (Lundsteen, 1964; Winter, 1966). Many of the recent studies have found that there is no significant difference between boys' and girls' listening comprehension (Fawcett, 1966; Jackson, 1966; Legge, 1967; Caccavo, 1969).

With the increased use of audio equipment in the classroom to facilitate personalized learning in the content subjects, information concerning the ease or difficulty of comprehending given materials is becoming vitally important to teachers when selecting and preparing content for oral presentations.

Problem

The purpose of this study was to ascertain whether significant differences existed between the scores achieved by grade six pupils on a listening comprehension test in three specific types of instructional materials: literary narrative, science, social studies. The study was designed to consider also the variables of subject's sex, and the order of presentation of the types of material.

Method

Subjects

The sample of 90 subjects studied in this investigation was chosen randomly from the total enrolment of 105 grade six students in a fifteen-room suburban Calgary elementary school.

Test Instrument

Since a comprehensive search through available listening tests indicated no instrument designed to measure the influence of the type of material, the investigator constructed a test instrument based on a silent reading test (Committee on Diagnostic Reading Tests, 1954) as a model. This reading test had been designed to specifically test the areas of science, social studies, and literature. The test instrument for this study was composed of six selections, two for each type of content. Each selection was followed by five multiple-choice questions based on the content of the material presented. These questions covered: main idea, sequence, word meaning, cause and effect relationships, and drawing conclusions. For each question there were five alternative answers from which the subject chose the best completion. The subject's test booklet was composed of the general instructions and one answer sheet for each of the selections. On each sheet the five alternative completions for each question were clearly printed. By having the alternatives available on the answer sheet, when the questions were presented orally by the investigator, the problem of testing the subject's ability to remember the five alternatives rather than his listening comprehension was alleviated.

The validity of the original standardized test was reported to vary from .50 to .56; further, the authors reported that the coefficients of reliability of all scores had been checked by the Kuder-Richardson technique and were found to be above .82 (Committee on Diagnostic Testing, 1954). In order to ensure, as far as possible, equivalence of form between the model and adapted instruments, the investigator used the following procedures.

The six test selections were adapted so that they were of comparable lengths. The total number of words for the three material types were: literary narrative, 445 words; social studies, 449 words; science, 441 words. Each test selection was rated for readability (Dale, Chall, 1948). For each of the material types the average corrected grade level was found to be in the 5-6 range. As well, each selection was rated for listenability (Rogers, 1952). The results indicated that the selections for each material type were about mid-grade eight level for easy comprehension. This further confirmed that the selections were of comparable levels of difficulty. Rogers (1952, p. 209) has pointed out that the formula score is only "a rough indicator of the lowest grade level at which any material for oral delivery may be easily understood by almost every child at that grade level". He also indicated that most children are able to comprehend orally presented materials at levels five to nine grades above their own grade level. According to the results of Rogers' formula, nearly all grade eight children should be able to easily comprehend the test materials when presented orally. Consequently, the materials were considered to be sufficiently challenging for test purposes at the sixth grade level without being too difficult to comprehend. Table 1 gives a summary of these adaptations. The test materials used in the adapted instrument were also checked for content validity. A panel of qualified educators in the fields of science, social

TABLE 1
SUMMARY OF ANALYSES OF TEST SELECTIONS FOR COMPARABILITY

Material Type	Literary Narrative	Science	Social Studies	Total Test
Total number of words	445	441	449	1335
Dale-Chall average Raw Score	5.99	5.84	5.84	5.89
Corrected Grade Level	5-6	5-6	5-6	5-6
Rogers average Raw Score	10.98	10.86	10.88	10.91
Corrected Grade-level for easy comprehension	8.60	8.50	8.50	8.53

studies and reading agreed that the selections reflected the content of the subjects they were chosen to test, and that the question types were asked consistently for each selection.

Design and Procedures

Using a 3 x 2 x 3 factorial design (Winer, 1962), the investigator randomly assigned the subjects to the three experimental groups with the aid of a table of random numbers (Kirk, 1968). The variables investigated were the three different orders of presentation, the two sexes of the subjects, and the three types of content materials.

The three experimental groups received the test selections in the following sequences:

- Group I: literary narrative, science, social studies
- Group II: science, social studies, literary narrative
- Group III: social studies, literary narrative, science.

The same general instructions were orally presented to each group by the investigator from a prepared script. As part of the general instructions, a sample selection was orally presented, and a sample question asked.

For each experimental group, the selections were presented orally by the investigator from a master copy which had been scored for stress and juncture. Following each selection, the investigator orally presented the five questions, each with its five alternative completions. For each question, the subject was required to indicate, by circling the corresponding numeral on the prepared answer sheet, the choice that he or she felt best completed the statement. A stop watch was used to ensure that fifteen seconds was allotted for the marking of each answer. Immediately following the administration of the test, the subjects' test booklets were collected.

The subjects' test booklets were later scored, and the results were tabulated for analysis. The possible score for each test selection was five. This gave a possible score of ten for each material type.

Data Collection

The test instrument yielded four scores for each of the subjects: a science comprehension score, a social studies comprehension score, a literary narrative comprehension score, and by adding these three together, a total listening comprehension listening score. Each of the sub-tests was scored out of 10; this gave a total listening comprehension score out of 30. When the data was tabulated it was found that the social studies and the literary narrative comprehension scores ranged from 1 to 10. The science comprehension scores ranged from 4 to 10. The total listening comprehension scores ranged from 11 to 29.

Analyses and Findings

The analysis of variance for the collected data was performed using the BMD 08V program of the CDC 6400 computer at The University of Calgary. A Table of Critical Values for F (Ferguson, 1971) was used to determine whether the observed F ratio values were significant. Significance had been set at .05 for this study. The table of critical values revealed that the F ratios for order, and sex were not significant; significance

was indicated for the material-type factor ($F = 13.95$; d.f. = 2). The order x material-type interaction ($F = 3.11$; d.f. = 4) also indicated significance. The mean scores of the three types of material were subjected to a Scheffé multiple comparison test (Ferguson, 1971) in order to determine the source of variance. At the .05 level of confidence, and for 2 and 168 degrees of freedom, the Scheffé critical value was computed to be 2.47. The values of the observed F in each comparison were:

<i>Comparison</i>	<i>F</i>
literary narrative, science	4.18
science, social studies	4.84
social studies, literary narrative	.66

Significance was reached when the science mean (7.2) was compared with both literary narrative mean (6.4) and social studies mean (6.2). These analyses indicated that the science mean score was significantly higher than the mean scores of either social studies or literary narrative.

In the analysis of variance, the observed F values for the interaction reached significance only for order x material. A comparison of the material-type means according to order of presentation indicated that the science material mean was consistently higher than the means of the other two types of material regardless of the order of presentation. The means of the literary narrative and social studies materials were highest when the material type was presented first, and lowest when it was presented last. The science material did not follow this pattern. The highest mean score was achieved when the science material was presented last, and the lowest mean score when it was presented first.

Discussion

This study focused on the influence of two specific factors in determining the listening comprehension of grade six pupils. These were the influence of material type, and the listener's sex. The findings of the study are discussed below with reference to these factors under the sub-headings: Material Type Differences, and Sex Differences.

Material Type Differences

When the science and social studies mean scores were compared, the analysis indicated that the science materials were significantly better comprehended than the social studies materials. This finding supports Ernest's (1968) suggestion that factual materials were better comprehended than conceptual materials. Since the more abstract ideas were presented in the social studies materials, this finding also supports the conclusions drawn by Beighly (1952), who reported that the concreteness of ideas facilitated listening comprehension, but the abstractness of ideas impeded comprehension.

The comparison of the mean scores of literary narrative and social studies revealed that there was no significant differences between the levels of achievement for these material types. This suggests that the students comprehend the two types of material at similar levels. Both types of material were based on more abstract concepts than those of the science

materials. The thematic organization of the literary narrative appears to be similar in difficulty to the conceptually organized social studies, and this may account for the fact that the listening scores did not differ significantly for these two types of material.

The science mean score was also found to be significantly higher than that of the literary narrative when these materials were compared. Since the basic ideas in the literary narrative dealt with curiosity, apprehension, desires, and aspirations, these materials also tended to be more abstract than the science selections. This gives further support to Beighly's (1952) conclusion that concreteness of ideas aids aural comprehension. Dolcini (1964) concluded from her study that fictional materials were better comprehended than factual materials. The findings of the present study do not support Dolcini's conclusion. The literary narrative materials (fiction), and the social studies materials (factual) produced very similar results. In all cases, the science materials (factual) consistently yielded the highest scores. Considering the results of the present study, the simplistic categories of fact and fiction did not explain the revealed differences.

Rogers (1952), who included the concept of idea unit in his listenability scale, dealt with the number of independent clauses in the material. Expanding on this concept, a new light is cast upon the differences that exist in this study if the ideational aspect is considered. This ideational factor refers to the capacity of the ideas in the selection to generate ideas in the mind of the listener. Three aspects of the ideational factor are: ideational content which refers to the quality of ideas contained in the selection, ideational relationships, and ideational organization. Thus, whether the ideational organization is direct or branching becomes influential in determining the level of the listener's comprehension. In this study, the highest mean scores were achieved in the science materials in which the ideas presented followed a more linear relationship than the ideas presented in the literary narrative or social studies materials where the relationships tend to branch and spiral. This tends to present a more complex system of relationships among the ideas expressed. As well, the greater number of concrete ideas were found in the science selections. The ideational content of such ideas tended to be much more controlled than the more abstract ideas of the other two types of material. Other factors being equal, the complexity of the ideational factor appears to be an important key to a listener's level of comprehension of an oral message.

Sex Differences

The analysis of variance indicated that there were no significant differences between the scores of the boys and of the girls in this study. This finding supports the conclusions of Fawcett (1966), Jackson (1966), Legge (1967), and Caccavo (1969).

General Conclusions

From the analyses of the data, and within the limitations of the study, the following conclusions can be drawn:

1. There is a significant difference between the listening scores achieved by grade six students in the three material types, with science mate-

rials being significantly better comprehended than either literary narrative material or social studies.

2. There appear to be no significant differences between the listening scores of the grade six boys and the grade six girls on these three material types.

Implications

The results of this study seem to have certain implications for both the classroom and further research. These are summarized below under the sub-heading: Classroom Implications, and Research Implications.

Classroom Implications

1. There is a need for specific listening instruction to facilitate the comprehension of sentences involving greater complexity of ideational load and organization.
2. There is a need for instruction in the interpretative skills to assist the student in more fully comprehending materials of a non-linear nature, such as literary narrative; this is also true for conceptually-oriented materials, such as social studies.
3. There is a need for instruction in listening to the "whole selection" rather than just for specific facts.
4. Relative to suggestion number 3, teachers need to take care when developing questions for orally-presented materials. These questions should direct the student's attention to the purpose of the entire selection, rather than to direct attention only to specifics. This may make necessary the practice of listening to a selection two or more times, and thus, time will have to be allotted accordingly.
5. There is a need for the student to develop the ability and the habit of relating facts, as well as acquiring them for direct recall.

Research Implications

1. Research is needed into the construction of an instrument that classroom teachers could use to evaluate the difficulty level of different types of material for oral presentation.
2. Research is needed to clarify the role of the ideational factor.
3. Research is needed in other subject areas, and at grade levels other than grade six.
4. This study has been largely exploratory in nature, and replication at the sixth grade level on a broader based sample is needed before conclusive interpretation of the material-type factor can be made.

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Economies of Scale in the Ontario Public School Sectors

This paper reports on the results produced by a recent study concerned with the optimal size of school and school board in Ontario. In addition the effects on cost of a number of product and process quality variables are analyzed. In general, the paper concludes that there are not continuing economies of scale in the public and secondary school sectors. (Dr. Dawson is Assistant to the President, Academic Planning, at McMaster University, Hamilton, Ontario; Mr. Dancey is with Coopers & Lybrand, Toronto.)

A number of recent Canadian studies have concerned themselves with the question of optimal school and school board size by estimating average cost curves. It is the purpose of this paper to report on a recent study on economies of scale as they pertain to the Ontario public school sector. This study updates the earlier work of Dawson (1972) in that it deals with the Ontario case after the school board consolidations of 1969 and it also deals with the elementary as well as the secondary school sectors.

In the study from which this report has been extracted the following subdivisions of cost were analyzed separately: (a) Instructional Costs; (b) Plant Operation and Maintenance Cost; (c) Administrative Costs. However, in the interests of space we concentrate only upon the aggregate results. The aggregate cost data used in this study were the figures for total ordinary expenditure for the year 1970 as reported to the Minister of Education for all school boards in Ontario except Metropolitan Toronto. The analysis is conducted separately for the elementary and secondary sectors.

In an attempt to allow for differences in quality between school boards at the secondary level a "Product" quality index was constructed using Service for Admission to College and University (SACU) test results for the three tests administered in the Fall of 1971.

The three tests given at that time were as follows: (1) Canadian Scholastic Aptitude Test—Verbal; (2) Canadian Scholastic Aptitude Test—Mathematics; (3) Canadian English Language Achievement Test.

Each score was reported on a 200-800 scale with a mean of approximately 500 and a standard deviation of approximately 100. The scores were available for each student and the following is a description of how the secondary school and board product indices (hereafter called SACU indices) were developed.

First, data were eliminated that did not contain scores for all three tests. This measure resulted in the loss of 1,128 records. The remaining 47,229 records were then sorted by school number. Since our investigation only involved public schools the scores of any students attending private schools then had to be deleted, leaving us with 42,330 scores. Means in each of the three tests were then calculated for each school, as were provincial means and standard deviations for each test.

The three scores for each school were then standardized by subtracting from each score the respective provincial mean, and dividing this sum by the provincial standard deviation for that score. From these three scores, an average (unweighted) score for each school was calculated. The index was then normalized so that all scores were positive and the provincial means of each individual index and the average index were all one. The schools for which we had complete cost and quality data comprised a data set of 417 schools.

The integral relations among the three variables are all quite high, indicating that the student who scores well on one test also tends to score well on the others. This fact justifies our use of an average SACU index. The simple correlations of the three test scores with an unweighted average SACU index are all very high (from .88-.94). An unweighted average was calculated as it is impossible to value one score above the others.

Finally, a board index was constructed. Each school index within the board was weighted by the number of students in that school whose scores were used to compute the school index. The resulting numbers for each school within the board were then added, and divided by the total number of students who took the tests within the board. There was only one board for which we could not calculate an index as no students in that board had taken the SACU tests in that year.

A second board index was constructed by deleting the Ecoles Secondaires, as some bias in the scores was noted for these schools although the tests could be written in English or French. This deletion affected six boards. The second index will be called SACU Index II as opposed to the first board index which will be called SACU Index I.

The Results—Secondary Sector

Table 1 contains the final regressions estimated for total ordinary expenditure at the secondary school level. Regressions 1-4 contain unweighted operating costs as the dependent variable while regressions 5-8 have total ordinary expenditure, weighted by SACU Indices I and II respectively as

TABLE I

Formulation 1 and 2 Regression Results - Secondary Level

Constant	X	X ²	$\frac{1}{X}$	Prop 3&4	Avg. Exp.	Pupil/Teacher
<u>Unweighted</u>						
2072.19 (21.527)	-0.00419 (- .966)	0.000000228 (1.025)		215.58 (2.331)	7.35 (1.391)	-68.82 (-11.809)
1986.69 (14.492)	-0.00449 (-1.030)	0.000000233 (1.039)		171.75 (1.644)		-66.04 (-10.883)
2059.46 (24.050)			50035.52 (4.400)	208.83 (2.830)	9.26 (1.960)	-73.36 (-13.728)
1918.25 (15.576)			51829.84 (4.474)	134.53 (1.582)		-69.37 (-12.850)
<u>Weighted - SACU Index I</u>						
2409.36 (16.598)			46536.81 (2.415)	-25.23 (- .202)	-9.25 (-1.156)	-80.69 (- 8.911)
2526.29 (12.066)			45641.74 (2.317)	37.65 (.260)		-84.37 (- 9.192)
<u>Weighted - SACU Index II</u>						
2402.36 (16.290)			53997.518 (2.758)	-16.32 (- .128)	-9.06 (-1.114)	-80.69 (- 8.771)
2496.11 (11.713)			53899.70 (2.688)	35.50 (.241)		-84.03 (- 8.995)

Bracketed terms indicate "t" scores.

the dependent variable. The first two regressions utilize formulation (1) while the remaining regressions were based on formulation (2).

$$(1) \frac{Y}{X} = a_0 + a_1X + a_2X^2 + \sum_{k=3}^n a_kP_k$$

$$(2) \frac{Y}{X} = a_0 + \frac{a_1}{X} + \sum_{k=2}^n a_kP_k$$

where Y stands for total ordinary expenditure and X stands for enrolment.

The P_k variables are often considered as variables which standardize for quality differences, but it should be noted that their cost related nature—with the resulting implication that higher spending naturally results in better quality education—hinders their effectiveness as pure quality indicators. The variables included here are (a) the proportion of teachers in Certification Groups 3 and 4; (b) average teacher experience; (c) the

Avg. School Size	Prop ² 2	D ₁	D ₂	R ²	F	Equation No.
-0.0523 (-2.181)		73.06 (4.269)	85.07 (2.452)	.76	27.52	1
-0.0513 (-2.128)	141.68 (1.181)	69.92 (4.189)	85.97 (2.468)	.76	27.21	2
		48.83 (3.232)	106.67 (4.605)	.80	46.70	3
	217.54 (1.991)	46.12 (3.104)	105.71 (4.570)	.80	46.80	4
		54.89 (2.144)	103.25 (2.631)	.70	27.94	5
	-188.29 (-1.013)	58.08 (2.299)	104.27 (2.651)	.70	27.75	6
		44.62 (1.715)	97.86 (2.758)	.69	26.41	7
	-159.41 (-.843)	48.16 (1.873)	98.92 (2.471)	.69	26.10	8

pupil/teacher ratio; (d) average school size; (e) the proportion with two or more years experience; (f) a dummy variable (D₁) for district boards; and (g) a dummy variable (D₂) for the four city boards. The variable for average school size was deleted in the final analysis when formulation (2) was used. Our reasons for the city dummy variable stem from an analysis of plant operating costs and instructional costs; the school size variable was deleted in formulation (2) due to its insignificance in preliminary regressions. Finally, there is more *a priori* support for the inclusion of the district dummy variable when the total expenditures are analyzed than when instructional costs alone are analyzed; therefore no regressions are listed with the district dummy variables deleted. Also, equalized assessment per pupil was introduced in the preliminary analysis but was not significant in explaining cost variables and so, has been omitted from the final regressions.

The first four regressions of Table 1 show unweighted total operating costs. Regressions 1 and 2, utilizing formulation (1), indicate a U-shaped average cost curve with a minimum near 9,300 pupils. However, the enrol-

ment terms have low t-scores and hence, any conclusions must be interpreted with caution. Both equations estimate marginal economies of scale (less than \$20 per pupil) as board size increases from 500-9,300 pupils. Over 60 percent of these savings have been achieved by a board size of 4,000 pupils. An examination of the residuals indicated that the equations underestimate slightly the smaller districts and tend to overestimate the middle sized counties (4,000-7,000 pupils) and the larger districts. This trend indicates that economies at the board level may in fact be larger than our estimation indicates. With weighted costs the enrolment terms using formulation (1) were very insignificant and have not been listed. The P_k variables in regressions 1 and 2 are of the appropriate sign. Both dummy variables are significant and positive indicating that the district and city boards spend more than the county boards. The coefficient of the pupil/teacher ratio has increased to an overestimated \$66-\$68 per pupil range—a value in the \$45-\$50 per pupil range would seem more appropriate. An overestimation of this variable may have obscured some of the economies which exist at the board level.

Regressions 3 and 4 in Table 1 utilize formulation (2) with the average school size variable deleted. The enrolment coefficients are significant and indicate economies of scale of \$98 and \$101 per pupil respectively as board size increases from 500 to 20,000 pupils. As in previous estimations using formulation (2), approximately 90 percent of the cost savings have been incurred by a board size of 4,000 pupils. Compared to regressions 1 and 2 the cost savings are substantially larger. The increased scale effects combined with the reduced size of the dummy variable for the district boards indicates that formulation (2) allocates more of the district versus county cost differences to scale effects and less to district versus county cost differentials for reasons other than board size. The city dummy variable has increased in size due to the fact that formulation (2) does not allow for any eventual increases in costs. An examination of the residuals indicated that these regressions slightly underestimate the large counties and overestimate the smaller counties (up to 7,000 pupils). The other P_k variables resemble the estimates in equations 1 and 2 quite closely.

Equations 5 through 8 are the final estimated equations using formulation (2) and weighted ordinary expenditure. The $\bar{R}^2$'s are slightly lower than those calculated for the unweighted costs; the enrolment terms indicate economies of scale at the board level. Equations 5 and 6—operating costs weighted by SACU Index I—indicate economies of approximately \$90 per pupil as board size increases from 500 to 20,000 pupils while equations 7 and 8—operating costs weighted by SACU Index II—estimate economies of nearly \$105 per pupil over the same range. The economies are slightly lower in equations 5 and 6 because applying SACU Index I to the operating costs yields relatively higher costs in the 2,000-4,000 pupil range. This effect is concentrated in the district boards and results in a higher value for the district dummy variable in equations 5 and 6 as well. The signs of the coefficients for the P_k variables are similar to those encountered in the analysis of weighted instructional costs.

Examination of the residuals to equations 5-8 indicated that the middle-sized counties were slightly overestimated while the larger ones were

slightly underestimated. The residuals for the district boards seemed to be fairly evenly dispersed. To correct for these areas of underestimation and overestimation, a more appropriate equation may be one which initially has a steep decline, then a gradual increase, and a levelling off or a decline as the larger boards are reached. This could be called a lazy S (⌒) or lazy U (⌒) relation depending on whether there is an eventual decline in the curve. We have no *a priori* reason for expecting this shape of curve over the original formulations except that the pattern of residuals indicates that these relations might provide a better fit to the data. The new relation can be estimated by combining formulations (1) and (2) into formulation (3):

$$(3) \quad \frac{Y}{X} = a_0 + \frac{a_1}{X} + a_2X + a_3X + \sum_{k=3}^n a_k p_k$$

where Y is total ordinary expenditure;

X is board enrolment;

P_k are process measures.

If a_1 and a_2 are positive and a_3 is negative the resulting curve will be of the lazy S shape. If the enrolment squared term is deleted ($a_3=0$) and a_0 and a_1 are positive the resulting relation is the lazy U shape.

Table 2 contains the regression results using the lazy S formulation. Equations 1 and 2 for the unweighted total ordinary expenditure conform to the lazy S shape with a minimum at a board size of 3,100 pupils, then a gentle rise in the cost curve to a board size of 15,500 pupils and a decline thereafter. For equation 1 the cost savings up to a board size of 3,100 pupils are about \$98 per pupil and the increase up to a board size of 15,000 pupils is \$27 per pupil. From this point to a board size of 20,000 pupils the cost savings are only \$6 per pupil. An examination of the residuals indicates that there is still an overestimation in the estimated costs for the boards in the 4,000-7,000 pupil range.

Equations 3 through 6 are for weighted ordinary expenditure. Their lazy S shape is less pronounced and the coefficient of the enrolment term (X) is no longer significant. Also, there is a local minimum near a board size of 3,100 pupils. The cost savings incurred up to this board size are approximately \$87 and \$98 per pupil for equations 3 and 4 respectively. However, the rise in the curves is only about \$10 per pupil and reaches its local maximum at a board size of only 9,500 pupils. Furthermore, the estimated declines in the curves beyond a board size of 9,500 pupils and up to 20,000 pupils are more substantial and vary from \$44 to \$54 per pupil for equations 1 and 2 respectively. However, the coefficient of enrolment squared (X^2) is also insignificant, so the cost savings beyond a board size of 9,500 pupils are questionable. Therefore, the lazy U relation which does not allow this decline is estimated. An examination of the residuals of equations 3 through 6 indicate that the middle-sized counties are still overestimated, and the large counties are slightly underestimated.

The results of the regressions using the lazy U formulation are contained in Table 3. Equations 1 and 2 are for unweighted total ordinary

TABLE 2

"Lazy S" Regression Results - Secondary Level

Constant	X	X ²	$\frac{1}{X}$	Prop 3&4	Avg. Exp.
<u>Unweighted</u>					
2025.45 (23.820)	0.0089 (1.834)	-0.00000028 (-1.229)	7098.69 (4.809)	133.47 (1.679)	12.29 (2.553)
2030.52 (23.594)	0.0085 (1.733)	-0.00000027 (-1.149)	67375.69 (4.136)	146.85 (1.753)	12.49 (2.572)
<u>Weighted - SACU Index I</u>					
2396.32 (16.133)	0.0095 (1.123)	-0.00000045 (-1.131)	63611.59 (2.467)	-61.16 (- .440)	-8.03 (- .955)
2379.89 (15.926)	0.0107 (1.249)	-0.00000050 (-1.242)	75255.33 (2.660)	-104.53 (- .719)	-8.68 (-1.030)
<u>Weighted - SACU Index II</u>					
2392.51 (15.894)	0.0103 (1.198)	-0.00000051 (-1.273)	71475.08 (2.736)	-47.00 (- .334)	-8.10 (- .951)
2375.88 (15.688)	0.0115 (1.323)	-0.00000056 (-1.383)	83265.59 (2.904)	-90.93 (- .617)	-8.77 (-1.026)

Bracketed terms indicate "t" scores.

expenditure. The results indicate a decline in costs of approximately \$96 per pupil as board size increases from 500 to 4,300 pupils. Beyond this point, there is a gradual increase of \$41 per pupil as board size grows to 20,000 pupils. Both enrolment terms are significant and the residuals indicate that only the middle-sized counties are overestimated.

For weighted costs (regressions 3 through 6) this enrolment term (X) is very insignificant; even if it were significant, the size of the coefficient indicates small diseconomies of scale as board size increases. The bulk of the cost savings estimated by these regressions has been incurred by a board size of 4,000 pupils. The residuals indicate that the middle-sized counties are slightly overestimated and the larger county boards slightly underestimated. There may therefore be some slight diseconomies in weighted costs which our equation fails to estimate, but in absolute amounts the diseconomies would be marginal.

Operating Costs—Elementary Level

Table 4 contains the regression results with total ordinary expenditure as the dependent variable. Again, note that only the results with formulation (1) are listed. The results with formulations (2) and (3) (the L,

Pupil/Teacher	Avg. School Size	D ₁	D ₂	$\bar{R}^2$	F	Equation No.
73.92 (14.027)		56.90 (3.751)	92.74 (3.025)	.81	37.45	1
73.75 (13.889)	-0.0125 (- .536)	58.61 (3.760)	92.12 (2.985)	.81	32.93	2
82.11 (8.920)		60.43 (2.281)	124.28 (2.321)	.70	20.89	3
82.65 (8.963)	0.0406 (1.00)	54.90 (2.028)	126.30 (2.357)	.70	18.68	4
82.37 (8.830)		50.05 (1.864)	127.11 (2.342)	.69	19.89	5
82.91 (8.873)	0.041 (.999)	44.45 (1.620)	129.15 (2.378)	.69	17.79	6

lazy S, and lazy U shaped curves) differed little with those of formulation (1) and are not included in the report.

The regression results indicate that there are no economies of scale when total ordinary expenditure is considered. If the pupil/teacher ratio were deleted from the analysis as well as the district dummy variable, the enrolment coefficients would indicate a U-shaped curve. However, as equations 5 and 6 note, the $\bar{R}^2$'s are much lower when the pupil/teacher ratio is omitted. Consequently, as in previous analyses, the pupil/teacher ratio appears to be the prime explanatory variable but there is little relation between this ratio and board size. Also of interest is the fact that the coefficient of the pupil/teacher ratio is relatively large and may be capturing cost effects as well as variations in the pupil/teacher ratio alone; this may be obscuring some slight economies of scale.

Conclusions

To conclude, at the secondary level, district, county, and city boards are faced with different problems and expenditure decisions; as a result, these different boards spend different amounts per pupil for other reasons than just cost differentials resulting from differences in board and school size. The quality problem and its cost-related nature account for some of

TABLE 3

"Lazy U" Regression Results - Secondary Level

Constant	X	$\frac{1}{X}$	Prop 3&4	Avg. Exp.	Pupil/Teacher
<u>Unweighted</u>					
2030.43 (23.806)	0.00333 (1.902)	61591.35 (4.854)	149.39 (1.897)	11.80 (2.450)	-72.99 (-13.936)
2036.47 (23.643)	0.00325 (1.843)	5798.81 (4.126)	165.16 (2.003)	12.08 (2.489)	-72.85 (-13.834)
<u>Weighted - SACU Index I</u>					
2404.31 (16.169)	0.0058 (.190)	48547.86 (2.195)	-35.58 (- .259)	-8.81 (-1.049)	-80.63 (- 8.829)
2391.05 (15.957)	0.00076 (.248)	57093.41 (2.347)	-70.18 (- .489)	-9.44 (-1.118)	-80.95 (- 8.837)
<u>Weighted - SACU Index II</u>					
2401.63 (15.892)	0.00008 (.027)	54289.41 (2.415)	-17.82 (- .128)	-8.99 (-1.054)	-80.68 (- 8.693)
2388.48 (15.681)	0.00026 (.085)	62769.73 (2.538)	-52.16 (- .358)	-9.62 (-1.120)	-81.00 (- 8.698)

Bracketed terms indicate "t" scores.

these differences. The process quality measures, which are cost related because teachers' salaries are related to experience and qualifications, were introduced to account for some of the differences in financial costs. To relate financial costs to economic costs, an objective quality measure which is not cost related was introduced. The resulting indices based on the SACU test scores are open to misinterpretation and criticism on many grounds (see Dancey & Dawson, 1973, Appendix B) but are at least one attempt to measure the output of the school system. In fact, such indices are probably the only direct measure of a school system which satisfy the characteristics of a valid index—its measurability and its objectivity. The final results show that at the board level and up to a board size of about 4,000 pupils there are economies of scale. No matter what formulation is used, this result is substantiated. However, beyond a board size of 4,000 pupils the results are more tenuous whether we use formulation (2) (an L shaped curve) or formulation (3) (either a lazy S or a lazy U shape). For unweighted costs it appears that there are some diseconomies beyond a board size of 4,000 pupils; but, when weighted costs are used the diseconomies are nonexistent. If the SACU indices are a valid quality measure

Avg. School Size	D ₁	D ₂	$\bar{R}^2$	F	Equation No.
	54.01 (3.589)	76.36 (2.754)	.81	42.23	1
-0.0157 (- .676)	56.35 (3.634)	76.67 (2.753)	.81	36.68	2
	55.79 (2.126)	97.98 (2.027)	.70	23.58	3
0.0346 (.854)	50.66 (1.878)	97.31 (2.008)	.70	20.63	4
	44.75 (1.678)	97.09 (1.977)	.69	22.27	5
0.0343 (.833)	39.66 (1.446)	96.43 (1.958)	.68	19.48	6

it appears that there are no diseconomies beyond a board size of 4,000 pupils. If the SACU indices are not valid, there may be diseconomies beyond a board size of 4,000 pupils but it is difficult at the aggregate level of total ordinary expenditure to determine *why* they exist. Perhaps some of the larger boards are faster growing and the board's growth may influence costs. That there are economies up to a board size of 4,000 pupils is substantiated by our analysis. Any further economies or diseconomies beyond this point are questionable and would be marginal compared to the original economies. A final note is the fact that the pupil/teacher ratio is a process measure which is extremely costly to lower, and was the one variable in all the analyses of instructional operating costs which consistently explained a large portion of the variance in the cost data.

At the elementary level, there appears to be little evidence of economies of scale.

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TABLE 4

Regression Results - Elementary Level

Constant	X	X ²	Pupil/Teacher	Assess/Pupil
974.31 (13.216)	0.00368 (2.347)	-0.000000088 (-2.055)	-21.02 (- 8.446)	0.00088 (3.498)
933.78 (13.690)	0.00288 (1.989)	-0.0000000718 (-1.832)	-19.78 (- 8.614)	0.000807 (3.492)
1188.21 (16.862)	-0.00047 (- .300)	-0.0000000020 (- .043)	-26.30 (- 9.937)	0.000736 (2.503)
1128.14 (16.787)	-0.00109 (- .750)	0.0000000101 (.238)	-24.55 (- 9.860)	0.000662 (2.434)
550.93 (37.035)	-0.0037 (-1.472)	0.000000126 (1.660)		
462.27 (24.324)	0.00397 (1.688)	-0.000000061 (- .957)		

Bracketed terms indicate "t" scores.

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vg. School Size	Ed. Serv.	D ₁	D ₂	$\bar{R}^2$	F	Equation No.
-0.0432 (- .628)		63.04 (4.992)	69.98 (3.444)	.76	31.72	1
-0.0479 (- .762)	1.668 (3.659)	59.25 (5.119)	53.36 (2.794)	.80	34.98	2
-0.0139 (-1.803)			73.77 (3.093)	.66	23.82	3
-0.139 (-1.938)	1.877 (3.486)		54.81 (2.420)	.72	25.76	4
				.01	1.42	5
		99.95 (5.974)	120.49 (4.331)	.45	15.32	6

B. SHARPLES

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Responsiveness of Educational Expenditures To Factors of Economic Growth

The purpose of this study was to propose a modification to the present method employed to measure the demand for public education as economic growth occurs. Currently, income elasticities used for this purpose are based upon the assumption that one factor, per capita income, adequately represents economic growth. This paper questions that assumption and suggests that economic growth is determined by changes in population as well as in per capita disposable income. In proposing the new approach, comparisons of the two measures are made using data from each province for the time period 1957-66. (Dr. Sharples is Assistant Professor in Educational Administration, Queen's University, Kingston, Ontario.)

The substantial growth in the levels of expenditures for elementary and secondary education has focussed increasing attention on the willingness of the public to support this particular service. Moreover, concern about the regional disparities in education throughout Canada has been expressed on many occasions. As a consequence, a number of efforts have been made in the past to measure the public's preference for education in Canada. These measures have been limited primarily to an expression of a simple ratio between educational expenditures and economic growth which has normally been represented by some measure of personal income. These means of indicating the degree of public support for education is not surprising in view of the fact that as early as 1863 the German economist Wagner, observed that as per capita income increased in the industrial nations the public sector grew in relative importance to the private sector (Bird, 1970, p. 7). On the basis of these observations Wagner predicted that a considerable public preference for the expansion of cultural and welfare expenditures would develop, and in particular education.

However, with the availability of a variety of ratios, each purporting to measure public preference for education, care must be taken in interpreting such data and should be based on a knowledge of the particular investigation being carried out. For example, the concern of this paper is in

examining measures that may be used to compare the willingness of the public to provide suitable levels of public education. The application of simple ratios for this particular purpose, as mentioned above, could lead to deceptive conclusions. For as Atherton points out:

. . . in 1962, Newfoundland spent some 17 percent of the per capita personal income in per pupil daily expenditures, whereas in Alberta some 32 percent was spent. To suggest that the Alberta effort was almost twice as great as that of Newfoundland would be an over simplification. After all a low income family might spend a considerably larger proportion of family income on food than would a wealthy family and yet not provide an adequate diet.

By the same token, one cannot say that if the low income family's income were doubled it would continue to spend the same proportion of its income on food. It is, in fact, unrealistic to use simple ratio measures as an indication of willingness or effort (Atherton, 1968, p. 30).

A more appropriate measure that is used by economists to compare the relative importance of a good or service to the consumer, requires the use of the concept of income elasticity. For many years the application of coefficients of elasticity has been limited to a measure of the effect of changes in personal income or price on the demand for commodities provided by the private sector of the market. Since 1950, increasing use has been made of this concept within the public sector of the economy to indicate the relative importance of a good or service to the public. In recent years, such measures have indicated that the public's willingness to support elementary and secondary education has been relatively high since expenditures have tended to rise more rapidly than per capita personal income (Paterson, Atherton, 1968). But do such measures realistically reflect public support for education? It can be argued that the principal weakness of these elasticities lies in the assumption that the distribution of expenditures between luxury and necessity goods is essentially dependent on changes in per capita income. It is for this reason that this paper is concerned primarily with a re-evaluation of income elasticity as the commonly used measure of public support for education. The particular concerns of this paper are limited to:

- (a) a brief examination of the concept of elasticity coefficient as a measure of demand for public goods and services;
- (b) a suggestion to modify the present means of indicating public responsiveness to increasing educational expenditures;
- (c) a comparison of measures of responsiveness by the present and proposed methods (For this part of the paper, the data used was collected for each province between the years 1957 and 1966.).

Concept of Elasticity

The elasticity coefficient is essentially a measure used to describe an association between two quantitative variables (Benson, 1966; Brennan, 1965; Leibenstein, 1960). In essence, the coefficient is basically a ratio of the relative change of a dependent variable such as educational expenditures and the corresponding change of an independent variable such as personal income. The ratio itself is normally interpreted as an expression of the relationship between the change in quantity demanded of any good

or service and a one percent change in personal income. For example, an income elasticity of 2.4 indicates that for every one percent increase in personal income, the public demand for the good or service under consideration can be expected to increase by 2.4 percent. On the other hand, an income coefficient of less than one, for example 0.5, indicates that the demand for the particular good or service increases by only 0.5 percent for every one percent increment in personal income.

Not only is the magnitude of the ratio of concern for purposes of interpretation but also the mathematical sign of the coefficient. Should the sign of the elasticity coefficient be the reverse of the expected direction of influence, it must be assumed that the independent variable in question is acting as a "suppressor". Thus, if the income coefficient were -2.4, then a 2.4 decrease in the demand is anticipated for each percent increase in personal income. In other words, as income increases there is a decrease in the demand for the good or service in question. The mathematical expression of an elasticity coefficient is simply:

$$e = \frac{\Delta x}{x} \bigg/ \frac{\Delta y}{y}$$

where x is the independent variable and y the dependent variable. While this method is used to measure changes in demand over a short period of time a different approach is employed to calculate average elasticity coefficients which summarize data for a period of years. This approach, which does not hold constant such changes as composition and distribution of income or changes in educational grant patterns, requires the use of simple linear regression analysis of the form:

$$\log y = \log c + e \log x$$

where y is the dependent variable, c is an equation constant, x represents the independent variable and e is the required coefficient (Burkhead, 1963).

Before interpreting such coefficients as measures of preference for a particular public good or service it is essential to accept certain assumptions. First, it must be assumed that educational expenditures are primarily dependent on economic growth measured in terms of personal income. Second, the level of expenditures set by elected officials for the good or service in question, is representative of individual preference since a consumer can only register his desire for public goods indirectly through these elected officials. Finally, it is also necessary to assume that the level of expenditures for a particular public good represents the quantity of the service provided. Once these basic assumptions are accepted then income elasticities can be used as sole measures of the demand for public goods or services.

Income Elasticities of Educational Expenditures

Unfortunately, any attempt to compare income elasticities computed by various researchers is fraught with problems. The main factors which deter such comparisons are the many forms used to express personal income and educational expenditures, the time periods considered and the methods

of computation employed. Thus, in any study involving elasticities, it is essential to carefully define the above factors.

In this study, the two fiscal variables employed, were disposable income and educational expenditures for the years 1957-66. Disposable personal income which excludes personal direct taxes, was preferred to the more commonly used measure, personal income, in an effort to accommodate for the different income distributions and age compositions which exist among the provinces. The measure of educational expenditures used included general operating expenses and any interest charges or debt repayments.

Such variables may be treated in the aggregate form or as a ratio to some independent variable. Use was made of per capita expenditures and per capita disposable income in order to provide a more suitable base for interprovincial comparisons. The results of the simple regression analysis on the time-series data for the years 1957-66 are provided in Table 1. Although the average income elasticity for Canada is 1.89, indicating a high degree of public willingness to spend a greater amount of the increase in disposable income for public education, there is a substantial variation among the provinces. In particular, the province of Saskatchewan for this time period registered the lowest elasticity coefficient of 0.96 whereas, the province of Quebec with a ratio of 2.29 led the provinces. Thus, the highest coefficient is more than twice the lowest income elasticity. In all cases, it can be stated that the public's preference for education was such that for each one percent increase in per capita disposable income, educational expenditures rose between 1 and 2.29 percent depending on the particular province, indicating fairly strong support for public education throughout Canada.

TABLE 1
INCOME ELASTICITY COEFFICIENTS OF EDUCATIONAL
EXPENDITURES PER CAPITA BY PROVINCE, 1957-66

Province	Constant	Income Coefficient of Elasticity
Newfoundland	- 7.59	1.34
Prince Edward Island	-13.63	1.90
Nova Scotia	-13.53	1.76
New Brunswick	- 6.75	1.28
Quebec	-23.39	2.29
Ontario	-19.36	2.00
Manitoba	-14.66	1.81
Saskatchewan	- 2.29	0.96
Alberta	- 7.31	1.31
British Columbia	-12.17	1.61
Canada	-24.48	1.89

D.B.S. National Accounts and Expenditures Survey of Education Finance

However, a word of warning is necessary regarding the temptation to extend the interpretation of elasticity coefficients beyond measures of public demand. These coefficients are merely ratios of two quantifiable

variables, consequently it is not possible to estimate the general magnitude of these variables from elasticity coefficients. In this particular case, one should not assume that income elasticities also measure the amount of educational expenditures expressed as a percent of disposable income. Nor for example, should one be tempted to infer that the percent of disposable income spent on public education in Quebec, is more than twice that in Saskatchewan. Furthermore, the usefulness of such elasticity is brought into question if any of the previously mentioned assumptions are challenged. It is with this very point that the remaining part of the paper is concerned.

Factors of Economic Growth

One of the basic assumptions underlying the use of income elasticities as measures of preference for public goods and services is that per capita personal income is the primary measure of economic growth. Unfortunately, this assumption is subject to question since the concept of economic growth has been defined in numerous ways. Certain writers have included a quantitative measure of the concept, while others have claimed that many of its elements defy measurement because some of the changes are qualitative. In very broad terms, the economic growth of a region may be described as the expansion of its output measured in terms of aggregate income (Firestone, 1969, p. 90; Siegel, 1965, p. 284).

Although the process of economic growth is extremely complex, some economists maintain that certain forces are essential to the growth process in general. Gill (1963) suggests that these forces have to do with the size, organization and character of a region's basic productive apparatus which he defines as follows:

It requires, first of all, the existence of the basic productive agents, or factors of production, as they are commonly called. There must be labour, natural resources, and certain tools, implements and other capital goods. It also requires that these factors of production be organized into some kind of producing units and that there be a minimum of technological knowledge to direct the society's productive efforts. Without any one of these elements, a country's productive capacity would either vanish or sink to the level of the jungle (Gill, 1963, p. 4).

On the basis of the above statement, it is permissible to consider economic growth as a process of expansion or improvement of the basic elements of production. Consequently, the level of a region's output of goods and services is affected by changes in both the factors of production and the production process itself. This latter viewpoint of economic growth more readily permits the disaggregation of the basic mensuration of economic growth (i.e., total aggregate income), used for studies of this nature into measures that represent certain basic forces essential for economic growth.

Total aggregate income (I) of a region may be viewed mathematically as being derived from a product of the region's population (P) and its average per capita income (i).

$$1. I = P \times i$$

This equation readily separates out population which may be considered to be a factor affecting one of the fundamental production agents, labour. As a consequence, it becomes evident from the above equation that increases in population will lead to economic growth through a general increase in aggregate income provided there is no decrease in per capita income and that a growth of the working force occurs. The other factor, per capita income, may be regarded as the contribution to economic growth because of changes in production processes. A change in the state of technology, when it is incorporated into production and distribution processes, will yield higher productivity per person with corresponding increases in per capita income. As the per capita income increases, a greater aggregate income will result provided no substantial decrease in population occurs. Thus, income per capita, may be regarded as a measure of the contribution to economic growth of the other production factors, natural resources and capital, through the process of technological development.

Since this paper is essentially concerned with the public's preferences for education as economic growth occurs, then consideration must be given to both of the factors mentioned above. The manner in which changes in these factors of economic growth relate to changes in educational expenditures, is the subject of the remaining sections of this paper.

Suggested Methodological Change

The above discussion indicates that by restricting the assessment of the demand for a public good or service to one independent variable, namely personal income, is a major limitation of the approach commonly used. Thus, two questions must be raised at this point. First, is there any method by which elasticities may be calculated using more than one variable? Second, if such a method does exist, how are the income elasticities affected when such a method is employed?

The answer to the first of these questions must be in the affirmative. Estimates of the responsiveness of educational expenditures, or any dependent variable, to more than one independent variable may be made through the application of multiple linear regression techniques to time-series data (Wilford, 1965; Legler and Shapiro, 1968). However, it must be realized that coefficients derived by this method depend not only on the change in the particular variable under consideration, but also the value of the other independent variables since it must be assumed that an interaction exists between the independent variables.

However, before going into some detail regarding this procedure, it is necessary to define a new term used with respect to the coefficients derived in this study. In keeping with earlier studies, the term "income elasticity" has been employed to designate the coefficients used to indicate the relationship between the changes that occurred in per capita disposable income and per capita educational expenditures. However, the term when used in the private sector of the market, implies a measure of demand for a commodity by the consumer which is not necessarily the case in the public sector. In the case of a public good or service, demand not only depends upon the individual's personal preferences, but also upon the pressures of needs for expenditures, the political strengths of interest

groups and the responsiveness of the government to varied political forces, all play a part. Consequently, such coefficients are not measures of demand in the private sector sense but more a measure of public preference for elementary and secondary education. In order to avoid these wider implications that might be associated with the term "income elasticity", the phrase "coefficient of responsiveness" will be used. This term will be limited to an expression of preference for a particular public good or service.

One means of empirically determining the responsiveness of per capita educational expenditures to changes in per capita disposable income and population is represented by the following equation:

$$2. Y = AX^{r_1} N^{r_2}$$

where X is per capita disposable income, A a constant, Y represents per capita educational expenditures, N represents population and r_2 represents the respective coefficients of responsiveness.

To facilitate comparisons of the results of the two methods, the data subjected to this form of regression analysis was obtained on a provincial basis for the same time span used to obtain the income elasticities in Table 1. To estimate coefficients of responsiveness by a regression equation, it was necessary to use the natural logarithm form of the equation:

$$3. \log Y = \log A + r_1 \log X + r_2 \log N$$

Effect of Proposed Methodological Change

Although the addition of a second variable resulted in an anticipated general adjustment of income coefficients of responsiveness, the degree of reduction was not uniform among the provinces. This observation may be readily made by comparing the data in Tables 1 and 2. The latter table not only includes income and population coefficients of responsiveness but also the equation constants and squares of the multiple correlations (R^2). The high R^2 's indicates that the proposed methodological change should not be rejected and that an examination of its effect on the responsiveness of per capita educational expenditures should be made.

Each coefficient derived by this method may be interpreted as a measure of the responsiveness of the public for education as changes occur in the factor of economic growth with which the particular coefficient is associated, assuming the other variable remains constant. Thus, each coefficient may be interpreted in a manner similar to that used for elasticity coefficients. For example, a population coefficient of responsiveness of 0.5 would indicate that for every one percent increase in economic growth associated with population expansion, the public is willing to increase per capita expenditures in public education by 0.5 percent, even if per capita disposable income remains unchanged. However, with more than one factor of economic growth being employed, coefficients may be more useful in analyzing the willingness of the public to support public education and in making policy recommendations when used in conjunction with expected trends in a province's per capita income and population growth. For example, if increasing educational expenditures continue to be met out of

TABLE 2

POPULATION AND INCOME COEFFICIENTS OF RESPONSIVENESS OF
EDUCATIONAL EXPENDITURES PER CAPITA BY PROVINCE, 1957-66

Province	Constant	Population	Per capita disposable income	R ²
Newfoundland	-22.09	1.44	1.02	96.52
Prince Edward Island	-41.49	3.03	1.46	95.83
Nova Scotia	-38.89	2.44	1.40	96.05
New Brunswick	-33.66	2.34	0.92	96.29
Quebec	-41.53	2.08	1.89	98.08
Ontario	-48.20	3.03	0.69	97.62
Manitoba	-48.77	3.35	0.94	91.51
Saskatchewan	-44.51	3.27	0.55	86.26
Alberta	-23.71	1.80	0.38	96.77
British Columbia	-51.32	4.23	-0.66	96.78
Canada	-62.03	3.72	0.57	99.93

D.B.S. National Accounts and Expenditures Survey of Education Finance

the public purse, then a province's tax system should take advantage of the type of economic growth it is experiencing.

The data presented in Table 1, as in previous studies¹ of this nature, infer that the public has long regarded education as a superior service since the coefficients indicate that as incomes increase, the consumer in all provinces is prepared to spend a greater proportion of his income on education. However, the information provided in Table 2 would indicate otherwise. According to these income coefficients, it is only the public in the so-called 'have-not' provinces that perceive the need to spend increasing amounts of their rising per capita income on education whereas the same need is not felt in the more affluent provinces. In fact, one could infer that in British Columbia, where the income coefficient is -0.66, people would prefer to spend less on public education as per capita income increases. In the remaining richer provinces, while the public responsiveness to education as per capita incomes increase is greater than in B.C., it is not in the same proportion as in the poorer provinces.

In contrast to the income coefficients, the values of the population coefficients indicate a generally higher public responsiveness for education as the population increases, regardless of increases in per capita income. Furthermore, while all the population coefficients of responsiveness exceed a value of one, the pattern of values is almost the converse to that of the per capita income coefficients. With the exception of Prince Edward Island and Alberta, the population coefficients of the more affluent provinces are significantly greater than the Maritime provinces and Quebec. Thus, it would appear that public education in the poorer provinces is not as responsive to changes in population as in richer provinces. In fact, it could be construed that as a province reaches a certain level of affluence then education becomes less responsive to the factor of economic growth represented by per capita disposable income and more responsive to changes in population.

Summary and Conclusion

In the past, the use of income elasticities of public education as a reflection of the demand for education, has been fairly common. However, the implicit assumption in this approach is that increases in per capita educational expenditures are solely dependent upon one factor of economic growth: an increase in per capita income. According to the elasticities calculated in this study such is not the case. It would appear that the high income elasticity coefficients so proudly quoted in the past to show the high demand for education were, in effect, composite measures of the responsiveness of educational expenditures to at least two basic factors of economic growth. Consequently, the encouragement given by these figures to those who saw a ready willingness of the public to invest increasing proportions of additional income must be dampened by the findings in this study.

The results show that while all the provinces are responsive to both factors of economic growth, they are more sensitive to changes in population than per capita income. However, the willingness of the public to support education in the 'have-not' provinces as per capita incomes increase, is significantly greater than in the richer provinces. One must assume that once a certain productivity per person is reached, then corresponding increases in per capita disposable incomes will not be used commensurately for educational purposes. Thus, educational expenditures become increasingly responsive to changes in basic production agents such as labor.

However, this greater responsiveness of expenditures to changes in population is not fully explained in purely economic terms.

The emphasis on improving the general level of education has also led to a general raising of academic requirements for many jobs although the intellectual requirements and salaries may not have changed proportionally. Thus, students have been encouraged in a number of ways to remain in school with the result that a greater proportion of students are completing high school matriculation requirements. However, the expenditures for the upper grades of high school education tend to be higher than for other grades. Thus, as more people take advantage of the educational services available then per capita expenditures in education can be expected to rise. But as more people become better educated, there is less assurance that an individual's academic qualifications will play a dominant role in determining salary and thus improving economic growth. Consequently, it is not surprising to find that per capita educational expenditures are more responsive to changes in population than in disposable income.

While the expenditures for this level of education tend to be greater than in other levels of public education the increases in enrolment alone are not completely responsible for the rise in per capita expenditures. Rising price levels for educational goods and services together with increases in the quality and quantity of educational programs offered also contribute to the increasing costs of public education. Therefore, as long as inflation exists and education continues to accept the function of socializing the young, then the need for public education will continue to grow.

In conclusion, it would appear that public education in Canada is responsive to factors of economic growth. Such factors are not necessarily fully known or readily given numerical values but the particular variables used in this study represent an attempt to separate the complex forces of economic growth and examine the responsiveness of public educational expenditures to them. On the basis of this assumption, it may be generalized that the public's preference for education is far more sensitive to changes in population rather than per capita disposable income. However, neither population nor per capita income demonstrates consistent or uniform demands for all provinces on either a long or short term basis. This condition is to be expected since economic, social and political factors do not only vary with time but also among geographical regions.

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Factorial Structure, Reliability, Validity, Effectiveness and Efficiency of the Canadian Cognitive Abilities Test

A random sample of 227 Grade One children was given the Canadian Cognitive Abilities Test (CCAT) on two occasions within seven months. During the second administration the WISC was also administered. KR-20 reliabilities of the CCAT for the two administrations were respectively .83 and .74. The test-retest reliability was .75. The correlation coefficient of the WISC IQ's and the CCAT second administration IQ's was .63. The efficiency and effectiveness indices of the CCAT were also obtained. A factor analysis of the WISC and CCAT subtests indicated that the two instruments measured different constructs. Other useful item data were also obtained. (Dr. Randhawa is Director of Research Resources Centre, University of Saskatchewan at Saskatoon; Dr. Hunt is Assistant Professor of Educational Psychology; Ms. Rawlyk is a doctoral candidate at the University of Illinois.)

The Cognitive Abilities Test (CAT) is a downward extension of the Lorge-Thorndike test of intelligence for use with Kindergarten to Grade Three. The *Canadian Cognitive Abilities Test* (CCAT) is essentially the CAT version, but standardized on Canadian samples in Kindergarten and Grades One to Four classes. The CCAT normative samples at each level were substantially large, but very little information is provided on the regional representation of the classes.

The paucity of Canadian standardized intelligence tests has led to the CCAT becoming one of the most popular group intelligence tests used in Canada. Many unsophisticated users of this imported test, validated on Canadian samples, most likely treat it as an original Canadian product. A close examination of the important technical aspects of this test in various

user communities is necessary so that its adequacies and inadequacies in assessing intelligence of Canadian children are widely known.

There is absolutely no information provided in the test manual on the validity of this test except for the construct validity inferred from a factor analysis. It is reported in the manual that the factor analysis was "based on a matched and representative sample of 300 pupils" (p. 26) in Grade 3 all of whom had taken the CCAT and the *Canadian Lorge-Thorndike Intelligence Tests, Multi-Level Edition, Level A* (CLTIT). However, no information is given on the matching procedure or the particular factor analytic method used. The reported results of the factor analysis were the unrotated factor loadings on three factors, communalities, eigenvalues, and cumulative percentage of variance accounted for. From these results the authors conclude, "It is quite evident from the first factor that basically what is being measured by all three batteries—the CCAT and the *Canadian Lorge-Thorndike Verbal and Nonverbal Batteries*—is a general reasoning factor" (p. 27). Factor II is tentatively designated a 'verbal' factor. However, the loadings of factor II on the four subtests of the CCAT are negative and on the verbal battery of the CLTIT are positive. This would suggest that the CCAT does not essentially measure the same thing as the verbal battery of the CLTIT. Furthermore, it is almost impossible to make any parsimonious interpretation from the matrix of unrotated factor loadings.

The present study was designed to examine the construct validity, reliability, item difficulties, discrimination indices, effectiveness and efficiency of the CCAT test.

Method

Sample

A random sample of 227 children, 113 males and 114 females, was drawn from a total of 914 Grade 1 children registered in a Canadian mid-western city school jurisdiction. Since the selection of the sample was strictly random, a cross-sectional representation of the various socio-economic levels resident in the city could be assumed.

Procedure

All the children in the sample had taken the CCAT *Primary I, Form I* in the seventh month of the grade one program. Approximately seven months after the first administration, in the first two months of Grade 2, the children were retested with the CCAT *Primary I, Form I* and at the same time the WISC was administered. The mean chronological age of the present sample at the time of the second administration was 87.2 months. The Standardization Year II (Grade 2) sample mean chronological age was 94.5 months. Since the mean chronological age difference was greater than seven months, the authors felt justified in using the CCAT P1/F1 for the second administration instead of the CCAT P2.

Data Analysis

KR-20 reliability coefficients of the CCAT for the first and the second administration were obtained. The stability coefficient between the two administrations was also calculated.

To examine the construct validity of the CCAT an intercorrelation matrix of the four CCAT subscores; Oral Vocabulary (OV), Relational Concepts (RC), Multi-mental (MM), and Quantitative Concepts (QC) and the ten WISC subscores; General Information (I), General Comprehension (CO), Arithmetic (A), Similarities (S), Vocabulary (V), Picture Completion (PC), Picture Arrangement (PA), Block Design (BD), Object Assembly (OA) and Coding (C) was obtained and subjected to a non-iterative Principal factor analysis (Harman, 1967). Four principal factors, corresponding to eigenvalues greater than one (Nie, Bent, & Hull, 1970), were retained, and the resulting factor matrix rotated to a varimax criterion.

The proportion of Ss who answered each item correctly was calculated. This was used as an estimate of item difficulty. The point-biserial correlation coefficients between the item and the total scores were obtained as estimates of discrimination indices.

The efficiency and the effectiveness of the CCAT were determined using the WISC as the criterion instrument. The efficiency of a screening instrument is defined as a percentage of the total number of children of given characteristics identified by the screening instrument which are attested by a criterion instrument. The effectiveness of an instrument is defined as the percentage of all the children with a given characteristic which the instrument correctly locates as compared with the total number of children having these characteristics as determined by the criterion instrument (Pegnato & Birch, 1959). For example, if a screening instrument identified 10 children from a sample below an IQ of 80 and a criterion instrument identifies five of these 10 children below an IQ of 80 then the efficiency of the screening instrument to screen children of these characteristics will be $\frac{5}{10} \times 100$ or 50%. However, if there were three other children in the sample which the screening instrument did not pick but who, in fact, possess the characteristics as identified by the criterion instrument then the effectiveness of the instrument will be $\frac{5}{5+3} \times 100$ or 62.5%.

Results and Discussion

KR-20 reliability coefficients of the test for the first and second administration were respectively 0.83 and 0.74. The second administration reliability is rather low. The ceiling effect may, in part, account for the slight shrinkage. However, the corresponding grade 2 reliability coefficient for Primary II on the Canadian Standardization Sample is 0.79 as compared with a value of 0.90 on the American Standardization Sample. Reliabilities vary from sample to sample, and from time to time on the same sample. No numerical value applies everywhere (Cronbach, 1970). Since the CCAT is a power test, not a speed test, the KR-20 coefficient for the first administration will not be inflated due to speededness. The KR-21 coefficient for Primary I, Grade 1 on the Canadian Standardization Sample is also 0.79.

The stability coefficient of the CCAT for a 7 month period was 0.75 which is relatively low. Bayley (1949) reported stability coefficients of 0.86 and 0.88 respectively for the Stanford-Binet for one year time lapse with

children of 6 and 7 years of age at the time of first test. For the Wechsler, there are similar data, consistent with those for the Stanford-Binet (Gehman & Matyas, 1956; Bayley, 1957). Group tests give fairly stable rankings for successive ages once children are accustomed to school and have stabilized their work habits.

The criterion-related validity coefficient based on the correlation between the WISC IQ and the CCAT second administration IQ scores was 0.63. However, the correlations of the CCAT IQ scores with the WISC verbal and performance IQ scores were respectively 0.55 and 0.57.

Since no parsimonious interpretation was possible from the unrotated factor loadings reported in the CCAT, P1/F1, Examiner's Manual (1970, p. 26), these loadings were rotated to varimax criterion. The resulting varimax factor matrix is presented in Table 1. It is evident from these

TABLE 1

VARIMAX FACTOR LOADINGS--300 THIRD GRADE PUPILS
FROM THE STANDARDIZATION PROGRAM

Variable	Factor Loadings			h ²
	I	II	III	
CCAT				
Oral Vocabulary	38	49	08	38
Relational Concepts	25	65	19	53
Multi-mental	08	45	33	33
Quantitative Concepts	15	77	29	70
CLTIT				
Multi-Level Verbal				
Vocabulary	76	31	19	72
Sentence Completion	79	12	29	73
Arithmetic Reasoning	47	30	43	49
Verbal Classification	64	23	35	58
Verbal Analogies	64	22	41	63
Multi-Level Nonverbal				
Figure Classification	33	28	64	59
Number Series	32	22	71	65
Figure Analogies	34	33	66	65

CCAT P1/F1 Manual, p. 26.

Decimal points omitted.

results that, unlike the one general reasoning factor inferred from the unrotated factor loadings by the authors of the CCAT, there are three distinct interpretable factors. Factor I is a verbal factor and Factor III is a non-verbal factor. It is interesting to note that Factor III is a non-verbal factor. It is interesting to note that Factor II, on which the CCAT subscores load significantly, is typical of the CCAT only. Thus it appears that whatever the CCAT is measuring, it is structurally independent of what is being measured by the verbal and the nonverbal batteries of the CLTIT. Therefore, an examination of the unrotated factor matrix is insufficient to substantiate the construct validity of the test.

TABLE 2
FACTOR LOADINGS OF THE WISC AND CCAT SUBSCORES

Variable	Unrotated				h ²	Rotated (Varimax)			
	I	II	III	IV		I	II	III	IV
WISC									
General Information	66	-10	06	06	45	46	29	28	28
General Comprehension	55	-37	05	48	67	80	03	17	05
Arithmetic	49	18	-56	-14	61	07	71	24	-18
Similarities	60	-29	-37	02	58	51	56	03	-01
Vocabulary	63	-44	-02	38	73	83	17	11	09
Picture Completion	56	-44	27	-09	59	53	17	-05	53
Picture Arrangement	61	04	-24	-33	55	11	67	18	23
Block Design	54	-06	-15	-35	43	13	57	07	29
Object Assembly	67	-04	12	-39	61	16	49	18	56
Coding	40	-01	61	-34	64	03	00	17	78
CCAT									
Oral Vocabulary	64	20	17	03	48	24	23	51	32
Relational Concepts	57	48	-06	21	60	13	26	72	-01
Multi-mental	42	49	31	21	55	05	-07	71	20
Quantitative Concepts	58	53	-03	20	66	09	25	77	02

The unrotated and the varimax factor loadings of the WISC and the CCAT subscores are given in Table 2. Again, from an examination of the unrotated factor loadings, factor I could erroneously be interpreted as a general factor. This is almost always possible in factoring in common factor space using principal factoring, because the first eigenvalue is the largest in the defined space. However, the varimax rotation of the above matrix gives four interpretable and parsimonious factors. Among these four factors, one factor (III) again is typical of the CCAT only. The other three factors can be labelled verbal, reasoning, and nonverbal respectively. Thus it is evident that the CCAT is measuring something which is structurally independent of that which is being measured by the WISC subtests. It is tentatively suggested that the CCAT subtests define a general oral information processing ability.

The purpose of the factor analyses reported above was to determine the construct validity of the CCAT and not the nature of intelligence. The authors of the CCAT, most obviously, reported the results of a common factor solution in the Manual and not an hierarchical factor solution. The notion of a general reasoning factor, or whatever other label is appropriate, could be entertained on the basis of a Schmid-Leiman Hierarchical solution from a correlational matrix of CCAT subscores and a certain number of other subtests measuring performance on a variety of tasks requiring a range of intellectual abilities. But this solution would not guarantee the construct validity of the CCAT.

Item difficulties and discrimination indices of the CCAT items for the present sample are given in Tables 3 and 4. Since no data were available in the manual on these indices, it was felt necessary to examine these indices to evaluate the items of the CCAT. As can be seen from Tables 3 and 4,

TABLE 3
FREQUENCY DISTRIBUTION OF ITEM DIFFICULTIES--CCAT

Class Interval	Subtests			
	Oral Vocabulary	Relational Concepts	Multi-Mental	Quantitative Concepts
1.0	1,3	4	1,2,3	1
.90 - .99	3,4,5,6,7,8,9	1,2,3,5,6,7,8,9,11,15,19	4,5,6,7,8,9,10	2,3,4,5,6,7,8,11,15
.80 - .89	12,13,19	10,12,14,18	12,15	9,13,14
.70 - .79	10,14	13,16,20	11,13	10
.60 - .69	11,15	17,21	16	12
.50 - .59	17,18	---	---	16
.40 - .49	20	---	---	---
.30 - .39	16,21	---	14	---
.20 - .29	---	---	---	---
.10 - .19	22	22	---	---

TABLE 4
FREQUENCY DISTRIBUTION OF ITEM DISCRIMINATION INDICES--CCAT

Class Interval	Subtests			
	Oral Vocabulary	Relational Concepts	Multi-mental	Quantitative Concepts
.50 - .59	17	21	16	10,16
.40 - .49	10,11,15,16,21	13	---	12
.30 - .39	13,19,20	12,16,17,20	11,13,14	9,13
.20 - .29	12,22	14,18,19	12	6,14,15
.10 - .19	5,6,7,9,14,18	7,11,15,22	7	4,5,7,8,11
.00 - .09	1,2,3,4,8	1,2,3,4,5,6,8,9,10	1,2,3,4,5,6,8,9,10,15	1,2,3

there are many items in each subtest which are very easy and have no discriminating characteristics. On the other hand, some items, such as item 22 in the Relational Concepts subtest, are very difficult and have again very low discrimination indices. Lack of discriminating power of the various items of the CCAT could be attributed to the use of Primary I instead of Primary II. However, as pointed out earlier, the present sample was, on the average, seven months younger than the standardization sample

for Primary II. The CCAT P1/F1 Manual provides norms for children up to age 8 and Grade 2. The raw score $\bar{X}$ was 56.2 and s was 9.0 on the first administration. The average age of the sample at that time was 80.7 months. The corresponding mean IQ for the first administration was 97. This evidence would substantiate the fact that the sample was representative of an average community. The second-administration $\bar{X}$ was 63.1 and s was 6.3 with the corresponding IQ of 107. Since the sample was selected from all the children in attendance in the entire school jurisdiction using random selection, the unexpected change in score may be contributed to several other factors. Firstly, the standardization sample included children in grade 1 from communities with a substantial kindergarten enrollment. There was no formalized kindergarten system in the community used in the present study at the time of the first test. The norms, as such, would appear inappropriate for this community. Secondly, the formalized instruction in school may have significantly improved the work habits of the children. Thirdly, practice in taking group tests may have improved the score significantly. In any case, there appears to be a need for more technical data in order to aid the selection of the appropriate level of the CCAT.

The efficiency and the effectiveness of the CCAT against the WISC as the criterion instrument for the low and high criterion scores are given in Table 5. Both the efficiency and the effectiveness are low for this sample.

TABLE 5
EFFICIENCY OF CCAT IN IDENTIFYING SUBJECTS
AT THE UPPER AND LOWER LEVELS OF THE WISC IQ SCORES

Description	WISC IQ 80	WISC IQ 130
Number correctly identified	2	8
Number incorrectly identified	5	16
Efficiency	28.5%	33.3%
Number missed	2	6
Effectiveness	50.0%	57.1%
CCAT IQ cutoff for 100% effectiveness	105	116

Number of children with WISC IQ below 80 is 4, above 130 is 14.

Thus if the CCAT is to be used to identify low and high IQ subjects for referrals, it should be used with caution. It was found for the present sample that to ensure 100% effectiveness the CCAT IQ cutoff points should be 105 and 116 respectively.

From the results of the present study, it would appear that the CCAT requires further refinement, particularly in the lower levels. If the CCAT is going to be used in Canada, it is essential that its users be assured of its validity and reliability. In an era of distrust of intelligence testing and public concern for misuse of intelligence scores, it is extremely im-

portant that the measuring instruments used are as free from technical deficiencies as is possible.

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CONTENTS OF NUMBER 10, NOVEMBER 1973

Articles on

The attitude of serving teachers to educational theory

Coalition formation in colleges of education and the introduction of the B.Ed.

Adjustment in the classroom

Role orientations and sub-cultures among undergraduate students

The effects of pre-test difficulty on post-test performance following self instruction

University course-changers and potential course-changers.

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